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USER GUIDE

BUSINESS SERIES

4-Port SSL/IPSec VPN Router

Model: RVL200

CISCO

About This Guide

Icon Descriptions

While reading through the User Guide you may see various icons that call attention to specific items. Below is a description of these icons:

NOTE: This check mark indicates that there is a note of interest and is something that you should pay special attention to while using the product.

WARNING: This exclamation point indicates that there is a caution or warning and it is something that could damage your property or product.

WEB: This globe icon indicates a noteworthy website address or e-mail address.

Online Resources

Website addresses in this document are listed without **http://** in front of the address because most current web browsers do not require it. If you use an older web browser, you may have to add **http://** in front of the web address.

Resource	Website
Linksys	www.linksys.com
Linksys International	www.linksys.com/international
Glossary	www.linksys.com/glossary
Network Security	www.linksys.com/security

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Chapter 1: Introduction

Introduction to the Router

Thank you for choosing the Linksys 4-Port SSL/IPSec VPN Router. The Router is an advanced Internet-sharing network solution for your small business needs. Like any router, it lets multiple computers in your office share an Internet connection. It features a built-in, 4-port, full-duplex, 10/100 Ethernet switch to connect four computers directly, or you can connect more switches to create as big a network as you need. If you have multiple routers in your Local Area Network (LAN), you can use the Router's multiple subnet feature to support those routers.

The five Secure Sockets Layer (SSL) Virtual Private Network (VPN) tunnels gives your mobile workers a secure and easy way to stay connected. Additionally, an IPSec (Internet Protocol Security), gateway-to-gateway VPN tunnel facilitates branch office connectivity. As an essential element of your business, the Router provides security functions for authentication, encryption, and firewall. Additional security features includes Denial of Service (DoS) prevention and HTTPS management, while the Quality of Service (QoS) features provide consistent voice and video quality throughout your business.

Use the browser-based utility to configure settings and run convenient wizards that will help you set up the Router and its access rules.

Introduction to Virtual Private Networks (VPNs)

A VPN is a connection between two endpoints—a VPN Router, for instance—in different networks that allows private data to be sent securely over a shared or public network, such as the Internet. This establishes a private network that can send data securely between these two locations or networks.

The private network is established by creating a "tunnel". A VPN tunnel connects the two computers or networks and allows data to be transmitted over the Internet as if it were still within those networks. A VPN tunnel uses industry-standard encryption and authentication techniques to secure the data sent between the two networks.

Virtual Private Networking was created as a cost-effective alternative to using a private, dedicated, leased line for a private network. It can be used to create secure networks linking a central office with branch offices, telecommuters, and/or professionals on the road. The 4-Port SSL/IPSec VPN Router supports two of the most popular VPN tunnel types, SSL and IPSec.

There are two basic ways to create a VPN connection:

- VPN Router to VPN Router
- computer (using SSL VPN client software) to VPN Router

NOTE: The 4-Port SSL/IPSec VPN Router does not support IPSec VPN client software.

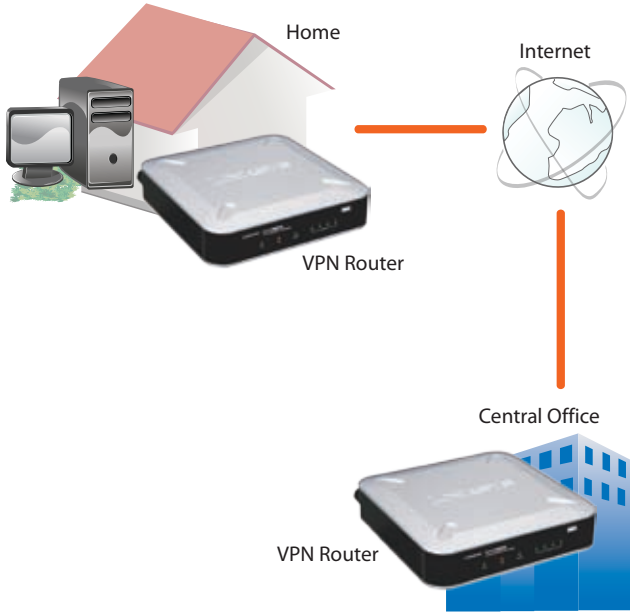
The VPN Router creates a "tunnel" or channel between two endpoints, so that data transmissions between them are secure. A computer with SSL or IPSec VPN client software can be one of the two endpoints.

For an IPSec VPN tunnel, any computer with the built-in IPSec Security Manager (Windows 2000 and XP) allows the VPN Router to create a VPN tunnel using IPSec (Windows Vista uses a similar utility). Other Windows operating systems require additional, third-party VPN client software applications that support IPSec to be installed.

For an SSL VPN tunnel, a computer can download the Virtual Passage SSL VPN client software during first-time connection to the SSL VPN Portal. (See "Appendix B: Virtual Passage SSL VPN Client.")

VPN Router to VPN Router

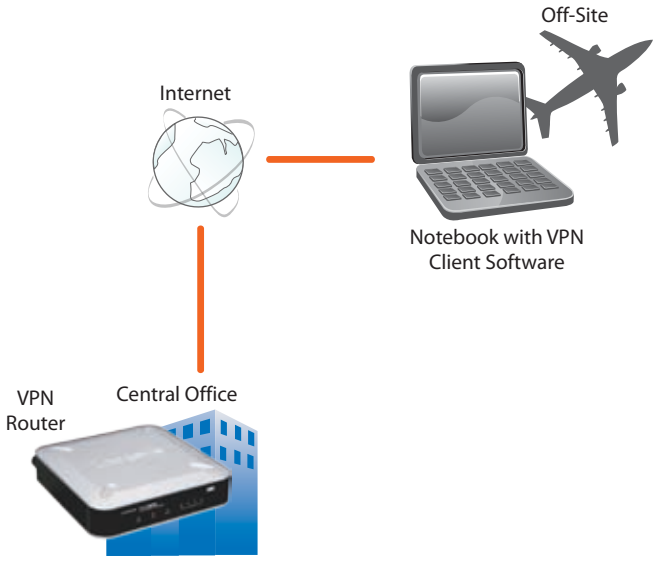
An example of a VPN Router-to-VPN Router VPN would be as follows. At home, a telecommuter uses his VPN Router for his always-on Internet connection. His Router is configured with his office's VPN settings. When he connects to his office's router, the two routers create a VPN tunnel, encrypting and decrypting data. As VPNs utilize the Internet, distance is not a factor. Using the VPN, the telecommuter now has a secure connection to the central office's network, as if he were physically connected.



VPN Router to VPN Router

Computer (using SSL VPN client software) to VPN Router

The following is an example of a computer-to-VPN Router VPN. In her hotel room, a traveling businesswoman connects to her Internet Service Provider (ISP). Her notebook computer has VPN client software that is configured with her office's VPN settings. She accesses the VPN client software and connects to the VPN Router at the central office. As VPNs utilize the Internet, distance is not a factor. Using the VPN, the businesswoman now has a secure connection to the central office's network, as if she were physically connected.



Computer to VPN Router

For additional information and instructions about creating your own VPN, visit the Linksys website at www.linksys.com.

Chapter 2: Product Overview

Front Panel

- **Power** (Green) The Power LED lights up green and stays on while the Router is powered on.
- **Diag** (Orange) The Diag LED lights up when the Router is not ready for use. During a warm reset, it flashes slowly. During a reset to factory defaults, it flashes quickly. The LED turns off when the Router is ready for use.
- **Internet** (Green) The Internet LED lights up and stays on when there is a connection made through the Internet port. It flashes to indicate network activity over the Internet port.
- **Ethernet 1-4** (Green) These numbered LEDs, corresponding with the numbered ports on the Router's back panel, serve two purposes. If the LED is solidly lit, the Router is connected to a device through that port. It flashes to indicate network activity over that port.

Back Panel

- **Reset** The Reset button can be used in one of two ways, warm reset and reset to factory defaults.
  - **Warm Reset** If the Router is having problems connecting to the Internet, press and hold in the Reset button for four seconds using the tip of a pen. This is similar to pressing the power button on your computer to reboot it. The Diag LED will flash slowly during a warm reset.
  - **Reset to Factory Defaults** If you are experiencing extreme problems with the Router and have tried all other troubleshooting measures, press and hold in the Reset button for ten seconds. This will restore the factory defaults and clear all of the Router's custom settings. The Diag LED will flash quickly during a reset to factory defaults.

    You can also reset the Router to factory defaults using the *System Management* > *Factory Defaults* screen of the Router's web-based utility.
- **Internet** The Internet port is where you will connect your cable or DSL Internet connection.
- **Ethernet 1, 2, 3, 4** These Ethernet ports (1, 2, 3, 4) connect the Router to wired computers and other Ethernet network devices.
- **Power** The Power port is where you connect the power adapter.

Chapter 3: Installation

Physical Installation

There are three ways to place the Router. The first way is to place it horizontally on a surface, so it sits on its four rubber feet. The second way is to stand the Router vertically on a surface. The third way is to mount it on a wall.

Horizontal Placement

The Router has four rubber feet on its bottom panel. Set the Router on a flat surface near an electrical outlet.

WARNING: Do not place excessive weight on top of the Router; too much weight could damage it.

Vertical Placement

1. Line up the edges of the Router with the two stands.
2. Insert the Router into the stands.
3. Set the Router on a flat surface near an electrical outlet.

Wall-Mounting Placement

The Router has two wall-mount slots on its bottom. The distance between the two slots is 64.4 mm (2.535 inches).

Two screws are needed to mount the Router.

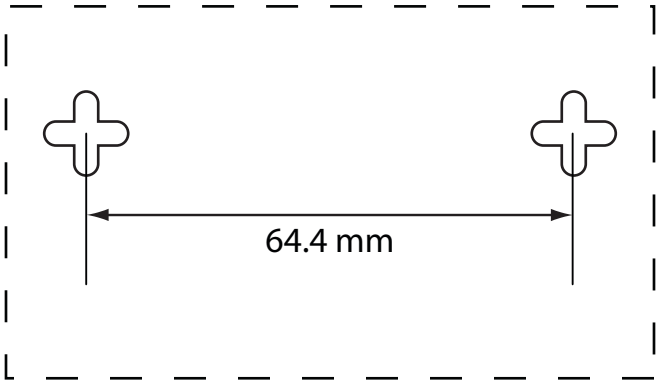
Suggested Mounting Hardware		
5.0-6.0 mm	1.6-2.0 mm	3.0-3.8 mm

†Note: Mounting hardware illustrations are not true to scale.

NOTE: Linksys is not responsible for damages incurred by insecure wall-mounting hardware.

Follow these instructions:

1. Determine where you want to mount the Router. Make sure that the wall you use is smooth, flat, dry, and sturdy. Also make sure the location is within reach of an electrical outlet.
2. Drill two holes into the wall. Make sure the holes are 64.4 mm (2.535 inches) apart.
3. Insert a screw into each hole and leave 5 mm (0.2 inches) of its head exposed.
4. Maneuver the Router so the wall-mount slots line up with the two screws.
5. Place the wall-mount slots over the screws and slide the Router down until the screws fit snugly into the wall-mount slots.



Print this page at 100% size. Cut along the dotted line, and place on the wall to drill precise spacing.

Wall Mounting Template

Cable Connection

To connect network devices to the Router, follow these instructions:

1. Before you begin, make sure that all of your hardware is powered off, including the Router, computers, switches, and cable or DSL modem.
2. Connect your cable or DSL modem's Ethernet cable to the Router's Internet port.

Connect to the Internet Port

3. Power on the cable or DSL modem.
4. Connect one end of an Ethernet network cable to one of the numbered ports on the back of the Router. Connect the other end to an Ethernet port on a network device, such as a computer or switch.

   Repeat this step to connect more computers or other network devices to the Router.

Connect to the Network Device

5. Connect the included power adapter to the Router's Power port, and then plug the power adapter into an electrical outlet.

Connect the Power

6. The Power LED on the front panel will light up as soon as the power adapter is connected properly.
7. Power on your computers and other network devices.

Chapter 4: Advanced Configuration

Overview

For your convenience, use the Router's web-based utility to set it up and configure it. This chapter will explain all of the functions in this utility.

These are the main tabs of the utility: System Summary, Setup, DHCP, System Management, Port Management, QoS, Firewall, IPSec VPN, SSL VPN, SNMP, Log, Wizard, Support, and Logout. Additional tabs will be available after you click one of the main tabs.

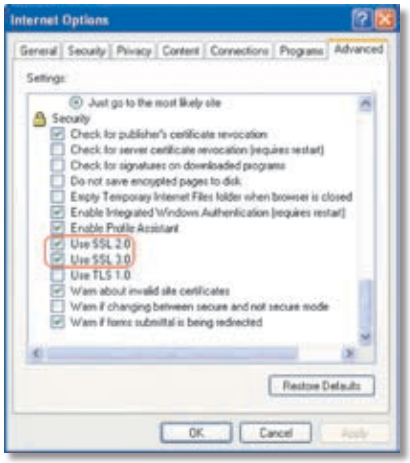
Before You Begin

The Router's web-based utility and SSL VPN Portal support Internet Explorer 6.0 (or higher) and Netscape Communicator 8.0 (or higher) running in a Windows environment.

To configure the SSL VPN software, your web browser must have SSL, JavaScript, ActiveX, and cookies enabled (these settings are enabled by default). If the settings are already enabled, proceed to the next section, "How to Access the Web-Based Utility". If the settings are disabled, you should enable them before configuring the Router. Proceed to the instructions for your web browser.

Internet Explorer 6.0 or Higher

1. Open **Internet Explorer**.
2. Click **Tools**.
3. Click **Internet Options**.
4. Click the **Advanced** tab.
5. Select **Use SSL 2.0** and **Use SSL 3.0**.

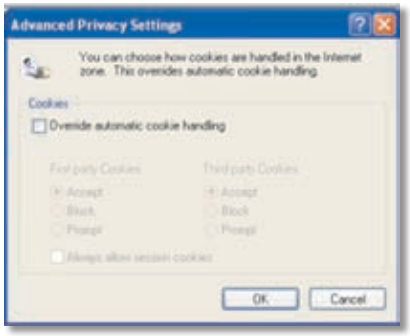


Internet Explorer > Tools > Internet Options > Advanced

6. Click **OK**.
7. Click the **Security** tab.
8. Click **Custom Level**.
9. Select **Enable** for *Active scripting*, *Allow paste operations via script*, and *Scripting of Java applets*.

Internet Explorer > Tools > Internet Options > Security

10. Click **OK**.
11. Click the **Privacy** tab.
12. Click **Advanced**.
13. Deselect (remove the checkmark from) **Override automatic cookie handling**.


Advanced Privacy Settings
You can choose how cookies are handled in the Internet zone. This overrides automatic cookie handling.
Cookies
Override automatic cookie handling
OK
Cancel

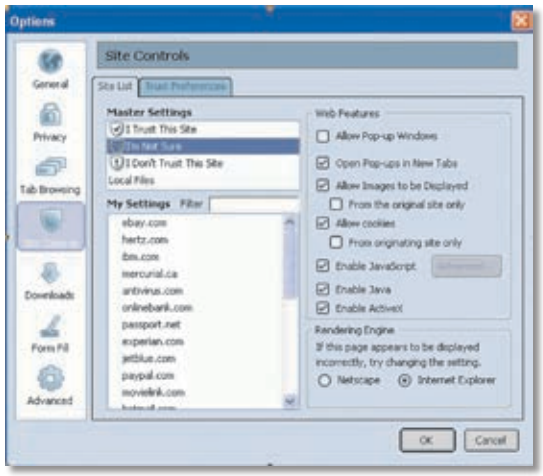
Internet Explorer > Tools > Internet Options > Privacy

14. Click **OK**.
15. Click **OK** again.

Netscape Communicator 8.0 or Higher

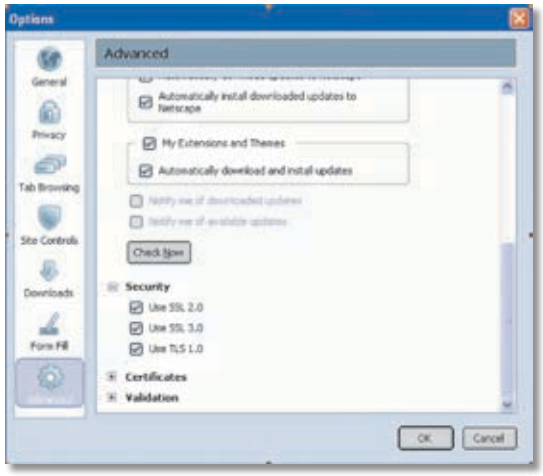
1. Open **Netscape Communicator**.
2. Click **Tools**.
3. Click **Options**.
4. Click **Site Controls**.
5. Click the **Trust Preferences** tab.
6. In the Master Settings section, click **I'm Not Sure**.

7. Select **Allow cookies**.
8. Select **Enable JavaScript**.
9. Click **Advanced**.
10. Select **Enable ActiveX**.



Netscape Communicator > Options > Site Controls > Web Features

11. Click **OK**.
12. Under Options, click **Advanced**.
13. Click **Security**.
14. Select **Use SSL 2.0** and **Use SSL 3.0**.



Netscape Communicator > Options > Advanced > Security

15. Click **OK**.

How to Access the Web-Based Utility

1. For local access of the Router's web-based utility, launch your web browser, and enter the Router's default IP address, **192.168.1.1**, in the *Address* field. Press the **Enter** key.

Address Bar

NOTE: If the Remote Management feature on the *Firewall* > *General* screen has been enabled, then users with administrative privileges can remotely access the web-based utility. Use **https://<WAN IP address of the Router>**.

2. A login screen prompts you for your User Name and Password. Enter **admin** in the *User Name* field, and enter **admin** in the *Password* field. (You can change the Password on the *Setup* > *Password* screen.) Then click **Login**.

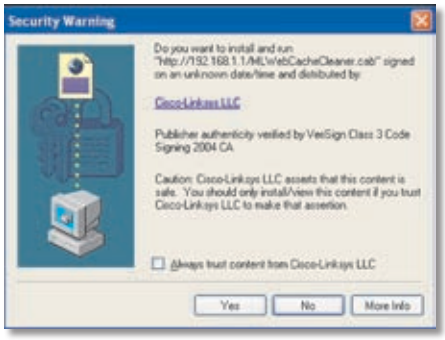
Login Screen

3. After you have logged in, you will be asked to install the Web Cache Cleaner application. This will prompt any user of the Router to delete all temporary Internet files, cookies, and browser history when the user logs out or closes the web browser window. (The ActiveX web cache control will be ignored by web browsers that do not support ActiveX.)

   Click the link to install the Web Cache Cleaner.

Click to Install the Web Cache Cleaner

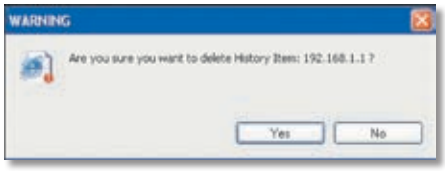
4. On the *Security Warning* screen, click **Yes**.


Security Warning
Do you want to install and run "http://192.168.1.1/ML/webCacheCleaner.cab" signed on an unknown date/time and distributed by:
Cisco-Linksys LLC
Publisher authenticity verified by VeriSign Class 3 Code Signing 2004 CA
Caution: Cisco-Linksys LLC asserts that this content is safe. You should only install/view this content if you trust Cisco-Linksys LLC to make that assertion.
Always trust content from Cisco-Linksys LLC
Yes
No
More Info

Click Yes to Install

5. The Web Cache Cleaner will be installed in C:\\ WINDOWS\Downloaded Program Files. Proceed to the rest of this chapter for information about the web-based utility.

   When you or another user logs out, a *Warning* screen will appear. It will ask you to confirm that you want to delete the History Item for the Router. Click **Yes**.

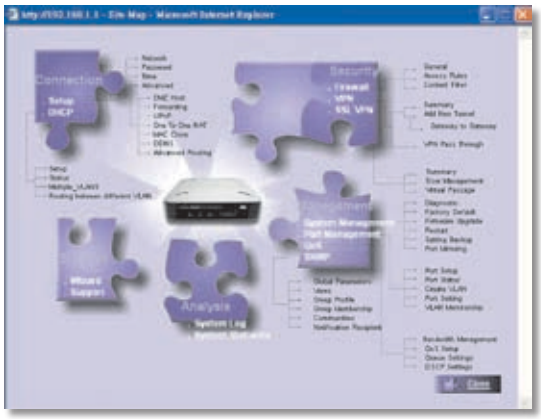


Click Yes to Delete History

System Summary

The first screen that appears is the *System Summary* screen, which displays the Router's current status and settings. This information is read-only. Underlined text is hyperlinked to related setup pages, so if you click a hyperlink, the related setup screen will appear. On the right-hand side of this screen and all other screens of the utility is a link to the Site Map, which has links to all of the utility's tabs. Click **Site Map** to view the Site Map. Then, click the desired tab.

System Summary



Site Map

System Information

Serial Number Displayed here is the serial number of the Router.

Firmware version Displayed here is the current version number of the firmware installed on the Router.

CPU Displayed here are the type and speed of the processor installed on the Router.

DRAM Displayed here is the size of DRAM installed on the Router's motherboard.

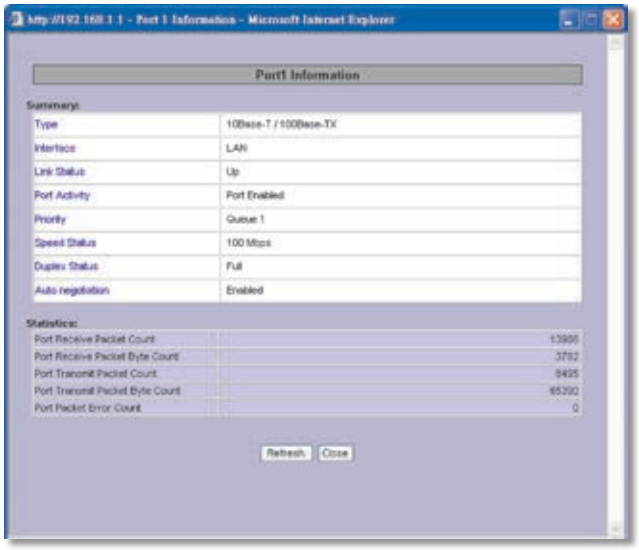
Flash Displayed here is the size of flash memory installed on the Router's board.

System Up Time This is the length of time in days, hours, and minutes that the Router has been active. The current time and date are also displayed.

Port Statistics

Click any port on the Router's rear panel image to see the status of the selected port. If the port is disabled, it will be red; if enabled, it will be black. If the port is connected, it will be green. Information about the selected port will appear in a separate window.

The port's Summary table shows the settings of the selected port, including Type, Interface, Link Status, Port Activity, Priority, Speed Status, Duplex Status, and Auto negotiation.



Port 1 Information

For the selected port, the statistics table shows this information: number of packets received, number of packet bytes received, number of packets transmitted, number of packet bytes transmitted, and number of packet errors.

To update the on-screen information, click **Refresh**. To exit this screen, click **Close**.

Network Setting Status

LAN IP It shows the current LAN IP Address of the Router, as seen by internal users on the network, and it hyperlinks to the LAN Setting section on the *Network* screen of the Setup tab.

WAN IP This shows the current WAN IP address of the Router, as seen by external users on the Internet and hyperlinks to the WAN Connection Type settings on the *Network* screen of the Setup tab. If the port is set to Obtain an IP automatically, two buttons, Release and Renew, will be available. Click **Release** to release the IP address, and click **Renew** to update the DHCP Lease Time or get a new IP address. If the WAN port is set to PPPoE or PPTP, two buttons, Connect and Disconnect, will be available.

Mode It shows the Router's Working Mode (Gateway or Router), and it hyperlinks to the Dynamic Routing section on the *Advanced Routing* screen of the Setup tab.

DNS It shows all DNS Server Addresses and hyperlinks to the WAN Connection Type settings on the *Network* screen of the Setup tab.

DDNS It shows the DDNS settings of the Router's WAN port and hyperlinks to the *DDNS* screen of the Setup tab.

DMZ Host It shows the DMZ Private IP Address and hyperlinks to the *DMZ Host* screen of the Setup tab. The default is **Disabled**.

Firewall Setting Status

SPI (Stateful Packet Inspection) It shows the status (On/Off) of the SPI setting and hyperlinks to the *General* screen of the Firewall tab.

DoS (Denial of Service) It shows the status (On/Off) of the DoS setting and hyperlinks to the *General* screen of the Firewall tab.

Block WAN Request It shows the status (On/Off) of the Block WAN Request setting and hyperlinks to the *General* screen of the Firewall tab.

Remote Management It shows the status (On/Off) of the Remote Management setting and hyperlinks to the *General* screen of the Firewall tab.

IPSec VPN Setting Status

IPSec VPN Summary It hyperlinks to the *Summary* screen of the IPSec VPN tab.

Tunnel(s) Used It shows the number of VPN tunnels used.

Tunnel(s) Available It shows the number of VPN tunnels available.

SSL VPN Setting Status

SSL VPN Summary It hyperlinks to the *Summary* screen of the SSL VPN tab.

Tunnel(s) Used It shows the number of VPN tunnels used.

Tunnel(s) Available It shows the number of VPN tunnels available.

Log Setting Status

It hyperlinks to the *System Log* screen of the Log tab.

If you have not set up the e-mail server on the Log tab, the message, "E-mail cannot be sent because you have not specified an outbound SMTP server address," will be displayed.

If you have set up the mail server but the log has not been generated due to the Log Queue Length and Log Time Threshold settings, the message, "E-mail settings have been configured," will be displayed.

If you have set up the e-mail server and the log has been sent to the e-mail server, the message, "E-mail settings have been configured and sent out normally," will be displayed.

If you have set up the e-mail server and the log cannot be sent to the e-mail server, the message, "E-mail cannot be sent out, probably use incorrect settings," will be displayed.

Setup Tab > Network

The *Setup* > *Network* screen shows all of the Router's basic setup functions. The Router can be used in most network setups without changing any of the default values; however, you may need to enter additional information in order to connect to the Internet through an ISP (Internet Service Provider) or broadband (DSL or cable) carrier. The setup information is provided by your ISP.

Setup > Network

Network

Host Name and Domain Name Enter a host and domain name for the Router. Some ISPs require these names as identification. You may have to check with your ISP to see if your broadband Internet service has been configured with a host and domain name. In most cases, you can leave these fields blank.

LAN Setting

The MAC Address of the Router is displayed.

Device IP Address and Subnet Mask The default values are 192.168.1.1 for the Router's local IP address and 255.255.255.0 for the subnet mask.

Multiple Subnet Select this option to enable the Multiple Subnet feature. Then click **Add/Edit** to create or modify subnet(s). A new screen appears.

Create or Modify a Subnet

LAN IP Address Enter the LAN IP address.

Subnet Mask Enter the subnet mask.

Click **Add to List**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Network* screen.

If you want to modify a subnet you have created, select it and Make changes.. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Network* screen.

If you want to delete a subnet you have created, select it and click **Delete selected subnet**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Network* screen.

WAN Connection Type

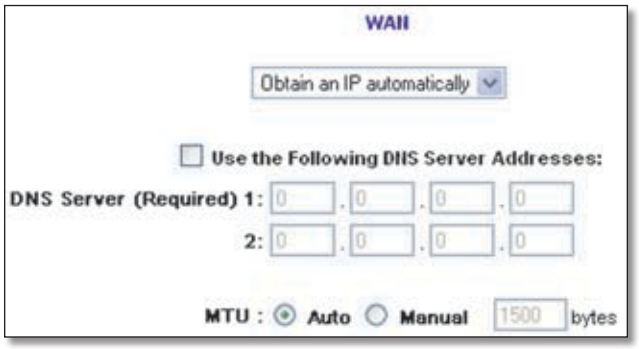
WAN

There are four connection types available: Obtain an IP automatically, Static IP, PPPoE, and PPTP. Depending on which connection type you select, you will see various settings.

Obtain an IP Automatically

If your ISP automatically assigns an IP address, select **Obtain an IP automatically**. (Most cable modem

subscribers use this connection type.) Your ISP assigns these values.



Obtain an IP Automatically

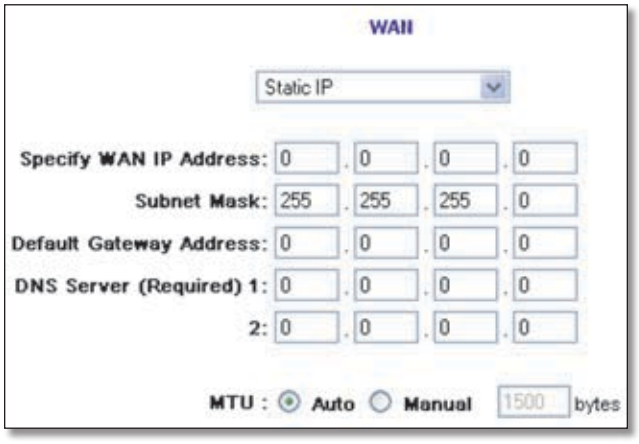
DNS Server (Required) 1/2 If you select Use the Following DNS Server Addresses, enter your DNS server IP address(es) (enter at least one). Multiple DNS server IP settings are common. In most cases, the first available DNS entry is used.

MTU The MTU (Maximum Transmission Unit) setting specifies the largest packet size permitted for network transmission. To manually set a value, select **Manual** and enter the value desired in the field provided. You should leave this value in the 1200 to 1500 range, and most DSL users should use the value 1492. The default is **Auto**, which allows the Router to select the best MTU for your Internet connection.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Static IP

If you are required to use a permanent IP address, select **Static IP**.



Static IP

Specify WAN IP Address Enter the external IP address of the Router.

Subnet Mask Enter the subnet mask of the Router.

Default Gateway Address Enter the IP address of the default gateway.

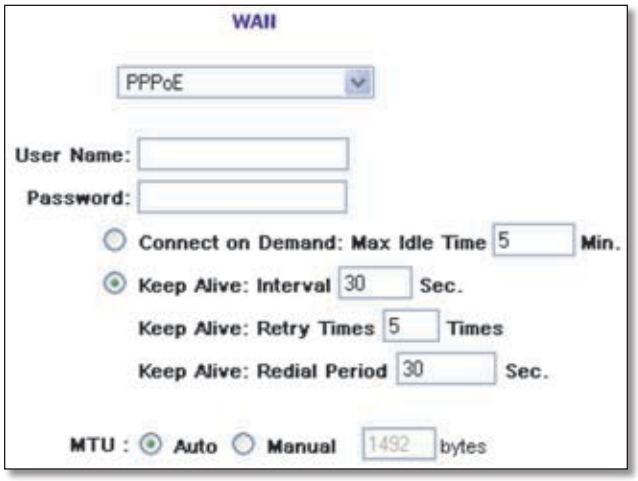
DNS Server (Required) 1/2 If you select Use the Following DNS Server Addresses, enter your DNS server IP address(es) (enter at least one). Multiple DNS server IP settings are common. In most cases, the first available DNS entry is used.

MTU The MTU (Maximum Transmission Unit) setting specifies the largest packet size permitted for network transmission. To manually set a value, select **Manual** and enter the value desired in the field provided. You should leave this value in the 1200 to 1500 range, and most DSL users should use the value 1492. The default is **Auto**, which allows the Router to select the best MTU for your Internet connection.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

PPPoE (Point-to-Point Protocol over Ethernet)

Some DSL-based Internet Service Providers (ISPs) use PPPoE (Point-to-Point Protocol over Ethernet) to establish Internet connections for end-users. If you use a DSL line, check with your ISP to see if they use PPPoE, select **PPPoE**.



PPPoE

User Name and Password Enter your account's User Name and Password. The maximum number of characters is 60.

Connect on Demand If you select the Connect on Demand option, the connection will be disconnected after a specified period of inactivity (Max Idle Time). If you have been disconnected due to inactivity, Connect on Demand enables the Router to automatically re-establish your connection as soon as you attempt to access the Internet again. Enter the number of minutes you want to have elapsed before your Internet access disconnects. The default Max Idle Time is **5** minutes.

Keep Alive: Interval If you select the Keep Alive option, the Router will send keep-alive packets as often as you specify. The default Interval is **30** seconds.

Keep Alive: Retry Times If you select the Keep Alive option, the Router will send keep-alive packets as many times as you specify. If the Router does not receive a response from the ISP, then the Router will terminate the connection and start sending PADI packets after the Redial Period. The default Retry Times is **5** times.

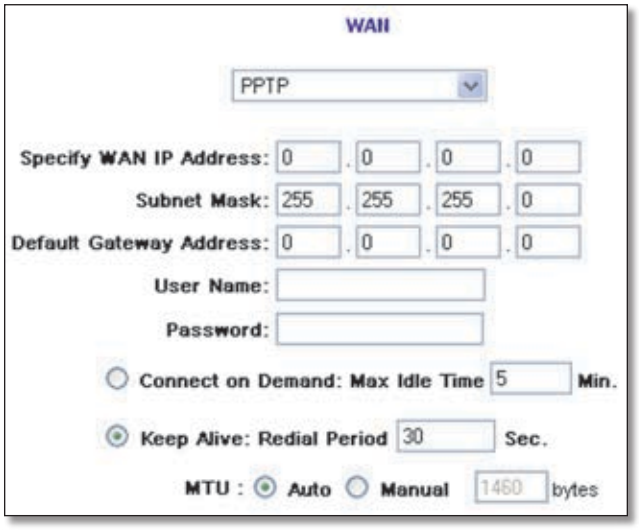
Keep Alive: Redial Period If you select the Keep Alive option, the Router will keep the connection alive by sending out a few data packets periodically, so your ISP thinks that the connection is still active. This option keeps your connection active indefinitely, even when it sits idle. The default Redial Period is **30** seconds.

MTU The MTU (Maximum Transmission Unit) setting specifies the largest packet size permitted for network transmission. To manually set a value, select **Manual** and enter the value desired in the field provided. You should leave this value in the 1200 to 1500 range, and most DSL users should use the value 1492. The default is **Auto**, which allows the Router to select the best MTU for your Internet connection.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

PPTP (Point-to-Point Tunneling Protocol)

Point to Point Tunneling Protocol (PPTP) is a service that applies to connections in Europe and Israel only.


WAN
PPTP
Specify WAN IP Address: 0 . 0 . 0 . 0
Subnet Mask: 255 . 255 . 255 . 0
Default Gateway Address: 0 . 0 . 0 . 0
User Name:
Password:
Connect on Demand: Max Idle Time 5 Min.
Keep Alive: Redial Period 30 Sec.
MTU : Auto Manual 1460 bytes

PPTP

Specify WAN IP Address Enter the external IP address of the Router.

Subnet Mask Enter the subnet mask of the Router.

Default Gateway Address Enter the IP address of the default gateway.

DNS Server (Required) 1/2 If you select Use the Following DNS Server Addresses, enter your DNS server IP address(es) (enter at least one). Multiple DNS server IP settings are common. In most cases, the first available DNS entry is used.

User Name and Password Enter your account's User Name and Password. The maximum number of characters is 60.

Connect on Demand If you select the Connect on Demand option, the connection will be disconnected after a specified period of inactivity (Max Idle Time). If you have been disconnected due to inactivity, Connect on Demand enables the Router to automatically re-establish your connection as soon as you attempt to access the Internet again. Enter the number of minutes you want to have elapsed before your Internet access disconnects. The default Max Idle Time is **5** minutes.

Keep Alive If you select the Keep Alive option, the Router will keep the connection alive by sending out a few data packets periodically, so your ISP thinks that the connection is still active. This option keeps your connection active indefinitely, even when it sits idle. The default Redial Period is **30** seconds.

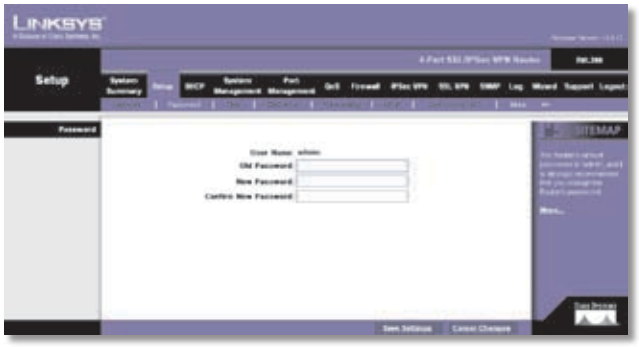
MTU The MTU (Maximum Transmission Unit) setting specifies the largest packet size permitted for network transmission. To manually set a value, select **Manual** and enter the value desired in the field provided. You should leave this value in the 1200 to 1500 range, and most DSL users should use the value 1492. The default is **Auto**, which allows the Router to select the best MTU for your Internet connection.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Setup > Password

The Router's default User Name and Password is **admin**, and Linksys strongly recommends that you change the Router's password from the default to a unique password.

NOTE: The password cannot be recovered if it is lost or forgotten. If the password is lost or forgotten, you have to reset the Router to its factory default settings; this will remove all of your configuration changes.



Setup > Password

Password

The User Name is admin; it cannot be changed.

Old Password Enter the old password. The default is **admin** when you first power up the Router.

New Password Enter a new password for the Router. Your password must have 20 or fewer characters and cannot contain any spaces.

Confirm New Password Re-enter the new password to confirm it.

Click **Save Settings** to save your change, or click **Cancel Changes** to undo it.

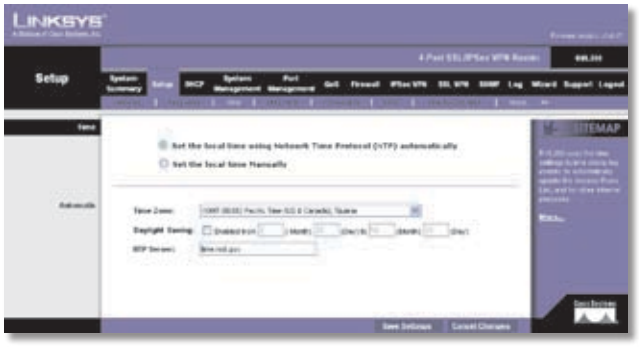
Setup > Time

The Router uses the time settings to time stamp log events, automatically apply the Access Rules and Content Filter, and perform other activities for other internal purposes.

Time

To set the local time, select **Set the local time using the Network Time Protocol (NTP) automatically** or **Set the local time Manually**.

Automatic



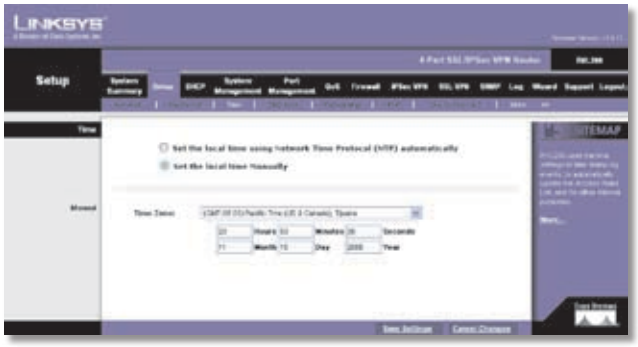
Setup > Time > Automatic

Time Zone Select your time zone (the default Time Zone is **Pacific Time**).

Daylight Saving To use the daylight saving feature, select **Enabled**. Enter the Month and Day of the start date, and then enter the Month and Day of the end date.

NTP Server Enter the URL or IP address of the NTP server. The default is **time.nist.gov**.

Manual



Setup > Time > Manual

Time Zone Select your time zone (the default Time Zone is **Pacific Time**).

Hours, Minutes, Seconds Enter the time.

Month, Day, Year Enter the date.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Setup > DMZ Host

The DMZ (Demilitarized Zone) Host feature allows one local user to be exposed to the Internet for use of a special-purpose service such as Internet gaming or videoconferencing. Although Port Range Forwarding can only forward 10 ranges of ports maximum, DMZ hosting forwards all the ports to one computer at the same time.

Setup > DMZ Host

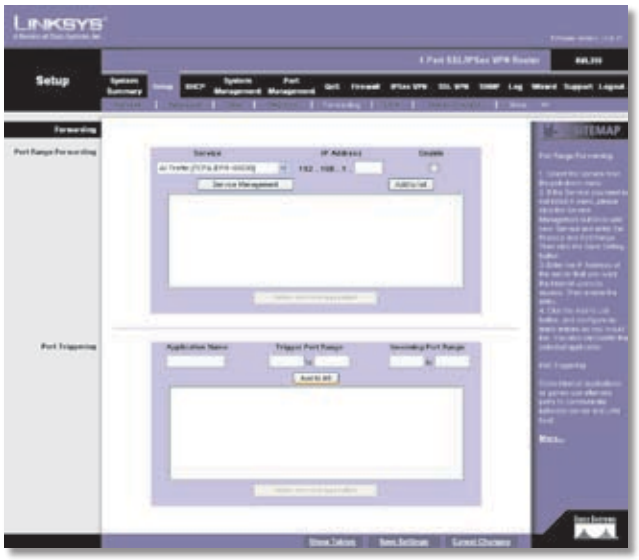
DMZ Host

DMZ Private IP Address Enter the local IP address of the computer you want to expose. The default value of **0** deactivates the DMZ Host.

Click **Save Settings** to save your change, or click **Cancel Changes** to undo it.

Setup Tab > Forwarding

The *Forwarding* screen allows you to set up port range forwarding and port triggering applications. Port range forwarding can be used to set up public services or other specialized Internet applications on your network, while port triggering can be used to set up triggered ranges and forwarded ranges for Internet applications.



Setup > Forwarding

Forwarding

Port Range Forwarding

Port forwarding can be used to set up public services on your network. When users from the Internet make certain requests on your network, the Router can forward those requests to computers equipped to handle the requests. If, for example, you set the port number 80 (HTTP) to be forwarded to IP address 192.168.1.2, then all HTTP requests from outside users will be forwarded to 192.168.1.2.

NOTE: You must disable the Router's DHCP function to use port forwarding.

You may use this function to establish a web server or FTP server via an IP gateway. Make sure that you enter a valid IP address. (You may need to establish a static IP address in order to properly run an Internet server.) For added security, Internet users will be able to communicate with the server, but they will not actually be connected. The packets will simply be forwarded through the Router.

Service Select the Service you want.

If the Service you need is not listed in the menu, click **Service Management** to add the new service. The *Service Management* screen appears.

Service Management

Service Name Enter a name.

Protocol Select the protocol it uses.

Port Range Enter its range.

Click **Add to List**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Forwarding* screen.

If you want to modify a service you have created, select it and click **Update this service**. Make changes. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Forwarding* screen.

If you want to delete a service you have created, select it and click **Delete selected service**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Forwarding* screen.

IP Address Enter the IP address of the server that you want the Internet users to access.

Enable Select **Enable** to enable this port range forwarding entry.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of 30. To delete an entry, select it and click **Delete selected application**.

Port Triggering

Port triggering allows the Router to watch outgoing data for specific port numbers. The IP address of the computer that sends the matching data is remembered by the Router, so that when the requested data returns through the Router, the data is pulled back to the proper computer by way of IP address and port mapping rules.

Some Internet applications or games use alternate ports to communicate between the server and LAN host. When you want to use these applications, enter the triggering (outgoing) port and alternate incoming port in the Port Triggering table. Then the Router will forward the incoming packets to the LAN host.

Application Name Enter the name of the application.

Trigger Port Range Enter the starting and ending port numbers of the trigger port range.

Incoming Port Range Enter the starting and ending port numbers of the incoming port range.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of 30. To delete an entry, select it and click **Delete selected application**.

Click **Show Tables** to see the details of your entries. The Port Range Forwarding Table List appears.

Port Range Forwarding Table List

Port Range Forwarding Select this option to view the Port Range Forwarding entries.

Port Triggering Select this option to view the Port Triggering entries.

Click **Refresh** to update the on-screen information. Click **Close** to exit this screen and return to the *Forwarding* screen.

On the *Forwarding* screen, click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Setup > UPnP

Universal Plug and Play (UPnP) can be used to set up public services on your network. When the UPnP function is enabled, Windows XP can modify these entries via UPnP.

Setup > UPnP

UPnP

UPnP Function Select **Yes** to enable the UPnP function. Otherwise, keep the default, **No**.

Service Select the Service you want.

If the Service you need is not listed in the menu, click **Service Management** to add the new service. The *Service Management* screen appears.

Service Management

Service Name Enter a name.

Protocol Select the protocol it uses.

External Port Enter the external port number.

Internal Port Enter the internal port number.

Click **Add to List**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *UPnP* screen.

If you want to modify a service you have created, select it and click **Update this service**. Make changes. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *UPnP* screen.

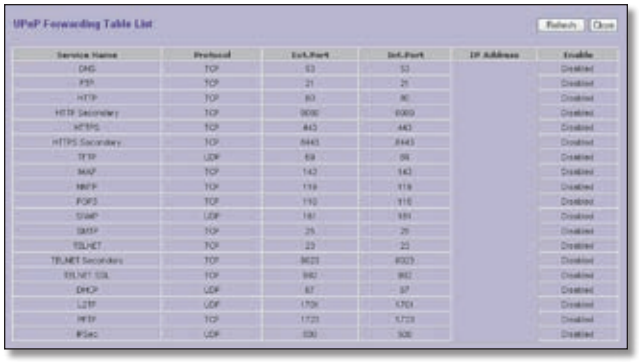
If you want to delete a service you have created, select it and click **Delete selected service**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *UPnP* screen.

Name or IP Address Enter the name or IP address of the server that you want the Internet users to access.

Enable Select **Enable** to enable this UPnP entry.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of 30. To delete an entry, select it and click **Delete selected application**.

Click **Show Tables** to see the details of your entries. The UPnP Forwarding Table List appears.



UPnP Forwarding Table List

Click **Refresh** to update the on-screen information. Click **Close** to exit this screen and return to the *UPnP* screen.

On the *UPnP* screen, click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Setup > One-to-One NAT

One-to-One NAT (Network Address Translation) creates a relationship that maps valid external IP addresses to internal IP addresses hidden by NAT. A device with an internal IP address may be accessed at the corresponding external valid IP address.

To create this relationship, define internal and external IP address ranges of equal length. Once the relationship is defined, the device with the first internal IP address is accessible at the first IP address in the external IP address range, and so forth.

For example, you have a Local Area Network (LAN) for which the ISP has assigned the IP address range of 209.19.28.16 to 209.19.28.31, with 209.19.28.16 used as the Wide Area Network (WAN) or NAT public IP address of the Router. The address range of 192.168.168.1 to 192.168.168.255 is used for the devices on the LAN. With One-to-One NAT, the devices with the internal IP addresses of 192.168.168.2 to 192.168.168.15 may be accessed at the corresponding external IP addresses.

NOTE: The Router's WAN IP address should not be included in the range you specify.

Setup > One-to-One NAT

One-to-One NAT

One-to-One NAT Select **Enable** to use the One-to-One NAT function.

Private Range Begin Enter the starting IP address of the internal IP address range. This is the IP address of the first device that

Public Range Begin Enter the starting IP address of the public IP address range. This IP address is provided by the ISP. (Do not include the Router's WAN IP Address.)

Range Length Enter the number of IP addresses in the range. The range length cannot exceed the number of valid IP addresses. To map a single address, enter **1**.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of 64. To delete an entry, select it and click **Delete selected range**.

NOTE: One-to-One NAT affects how the firewall functions work. Access to LAN devices from the Internet is allowed unless access rules are set.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Setup > MAC Clone

Some ISPs require that you register a MAC address, which is a 12-digit code assigned to a unique piece of hardware for identification. The MAC Clone feature "clones" your network adapter's MAC address onto the Router, so you don't have to call your ISP to change the registered MAC address to the Router's MAC address.

For the WAN port, you can assign or clone a MAC address.

Setup > MAC Clone

MAC Clone

User Defined WAN MAC Address To manually clone a MAC address, select **User Defined WAN MAC Address**, and then enter the 12 digits of your adapter's MAC address.

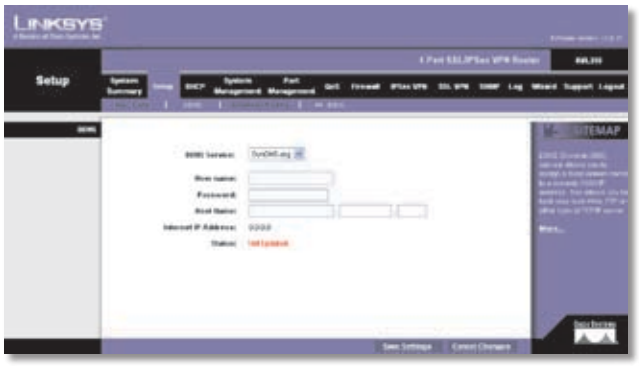
MAC Address from this PC To clone the MAC address of the computer you are currently using to configure the Router, select **MAC Address from this PC**.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Setup > DDNS

Dynamic Domain Name System (DDNS) service allows you to assign a fixed domain name to a dynamic WAN IP address, so you can host your own web, FTP or other type of TCP/IP server in your LAN. The DDNS feature is disabled by default.

Before configuring DDNS, visit www.dyndns.org and register a domain name. (The DDNS service is provided by DynDNS.org).



Setup > DDNS

DDNS

DDNS Service To enable DDNS, select **DynDNS.org**. Otherwise, select **Disable**.

User Name and Password Enter your DynDNS.org account information.

Host Name Enter your host name in the three *Host Name* fields. For example, if your host name were myhouse.dyndns.org, then myhouse would go into the first field, dyndns would go into the second field, and org would go into the last field.

Click **Save Settings**, and the status of the DDNS function will be updated.

Internet IP Address The Router's current Internet IP address is displayed. Because it is dynamic, this will change.

Status The status of the DDNS function is displayed. If the status information indicates an error, make sure you have correctly entered the information for your account with your DDNS service.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Setup > Advanced Routing

The *Advanced Routing* screen allows you to configure the dynamic and static routing settings.

Setup > Advanced Routing

Advanced Routing

Dynamic Routing

The Router's dynamic routing feature can be used, so the Router will automatically adjust to physical changes in the network's layout. Using the dynamic RIP protocol, the Router calculates the most efficient route for the network's data packets to travel between the source and the destination, based upon the shortest paths. The RIP protocol regularly broadcasts routing information to

other routers on the network. It determines the route that the network packets take based on the fewest number of hops between the source and the destination.

Working Mode Select **Gateway** mode if the Router is hosting your network's connection to the Internet. Select **Router** mode if the Router exists on a network with other routers, including a separate network gateway that handles the Internet connection. In Router mode, any computer connected to the Router will not be able to connect to the Internet unless you have another router function as the gateway.

RIP (Routing Information Protocol) To use dynamic routing for communication of network data, select **Enabled**. Otherwise, keep the default, **Disabled**.

Receive RIP versions To use dynamic routing for reception of network data, select the protocol you want: **None**, **RIPv1**, **RIPv2**, or **Both RIP v1 and v2**.

Transmit RIP versions To use dynamic routing for transmission of network data, select the protocol you want: **None**, **RIPv1**, **RIPv2 - Broadcast**, or **RIPv2 - Multicast**.

Static Routing

If the Router is connected to more than one network or there are multiple routers installed on your network, it may be necessary to set up static routes. The static routing function determines the path that data follows over your network before and after it passes through the Router. You can use static routing to allow different IP domain users to access the Internet through the Router.

Static routing is a powerful feature that should be used by advanced users only. In many cases, it is better to use dynamic routing because it enables the Router to automatically adjust to physical changes in the network's layout.

If you want to use static routing, the Router's DHCP settings must be disabled. Then add routing entries to the Static Routing table. These entries tell the Router where to send all incoming packets. All of your network routers should direct the default route entry to the 4-Port SSL/IPSec VPN Router.

NOTE: Static routing is an advanced feature. Create these routes with care.

To create a static route entry, enter the following information:

Destination IP Enter the network address of the remote LAN segment. For a standard Class C IP domain, the network address is the first three fields of the Destination LAN IP, while the last field should be 0.

Subnet Mask Enter the subnet mask used on the destination LAN IP domain. For Class C IP domains, the subnet mask is 255.255.255.0.

Default Gateway Enter the IP address of your network's gateway. If this Router is used to connect your network to the Internet, then the gateway IP is the Router's Internet IP address. If you have another router handling your network's Internet connection, enter the IP address of that router instead.

Hop Count Enter the appropriate value (maximum is 15). This indicates the number of nodes that a data packet passes through before reaching its destination. A node is any device on the network, such as a switch, PC, or router.

Interface Select the appropriate interface. The Interface tells you whether your network is on the LAN or the WAN (the Internet). If you're connecting to a sub-network, select **LAN**. If you're connecting to another network through the Internet, select the appropriate WAN port option.

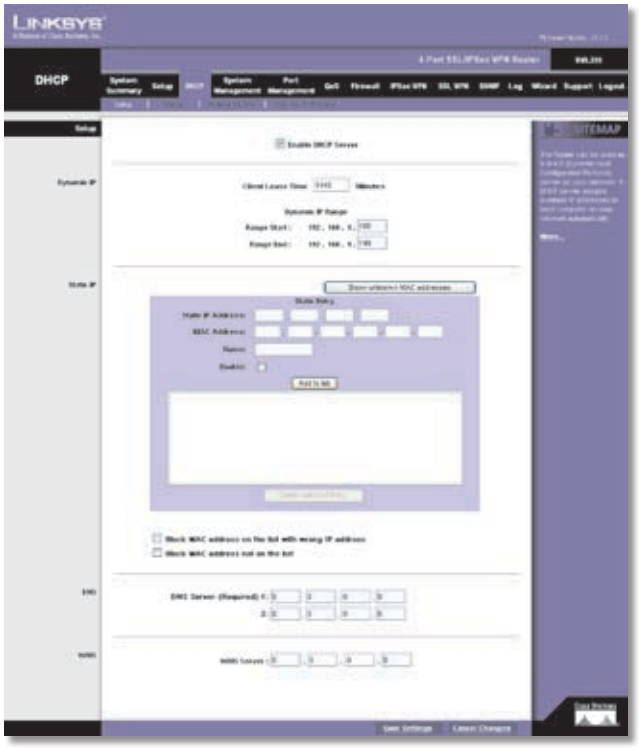
Click **Add to List**, and configure as many entries as you would like, up to a maximum of 30. To delete an entry, select it and click **Delete selected IP**.

Click **Show Tables** to see the details of your entries. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

DHCP > Setup

The Router can be used as a DHCP (Dynamic Host Configuration Protocol) server on your network. A DHCP server automatically assigns available IP addresses to computers on your network. If you choose to enable the DHCP server option, all of the computers on your LAN must be set to obtain an IP address automatically from a DHCP server. (By default, Windows computers are set to obtain an IP automatically.)

If the Router's DHCP server function is disabled, you have to carefully configure the IP address, subnet mask, and DNS settings of every computer on your network. Make sure you do not assign the same IP address to different computers.



DHCP > Setup

Setup

Enable DHCP Server To use the Router as your network's DHCP server, select **Enable DHCP Server**. If you already have a DHCP server on your network, remove the check mark.

Dynamic IP

Client Lease Time The Client Lease Time is the amount of time a network user will be allowed connection to the Router with their current dynamic IP address. Enter the amount of time, in minutes, that the user will be "leased" this dynamic IP address. The range is 5-43,200 minutes. The default is **1440** minutes.

Dynamic IP Range Start/End Enter a starting IP address and ending IP address to create a range of available IP addresses. The default range is **100-149**. Enter a value for the DHCP server to start with when issuing IP addresses. This value must be 192.168.1. 2 or greater, because the default IP address for the Router is 192.168.1.1.

Static IP

You can assign a static IP address to a specific device based on its MAC address.

Show unknown MAC addresses Click **Show unknown MAC addresses** to view all devices' IP addresses and corresponding MAC addresses. The Unknown MAC Address List appears.

Unknown MAC Address List

To add an IP address and MAC address set to the Static IP list, select **Enable**, and then click **Apply**. To add all IP addresses and MAC addresses to the Static IP list, click **Select All**.

To update the on-screen information, click **Refresh**. To exit this screen and return to the *DHCP* > *Setup* screen, click **Close**.

Static IP Address Enter the static IP address. You can enter 0.0.0.0 if you want the Router to assign a static IP address to the device.

MAC Address Enter the MAC address of the device.

Name Enter a descriptive name for the device.

Enable Select **Enable** to assign the static IP address to this device.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of 100. To delete an entry, select it and click **Delete selected Entry**.

Block MAC address on the list with wrong IP address To block traffic from devices with MAC addresses on the Static IP list but using the wrong IP addresses, select this option. It prevents users from changing device IP addresses without your permission.

Block MAC address not on the list To block traffic from devices using dynamic IP addresses, select this option. It blocks all devices with MAC addresses not listed on the Static IP list.

DNS

DNS Server You can assign DNS server(s) to the DHCP clients so the Router will use the DNS server(s) for faster access to functioning DNS server(s). Enter the IP address of at least one DNS server.

WINS

WINS Server Windows Internet Naming Service (WINS) is a service that resolves NetBIOS names to IP addresses. WINS is assigned if the computer (DHCP client) requests one. If you do not know the IP address of the WINS server, keep the default, **0.0.0.0**.

NOTE: To support NetBIOS for DHCP and Virtual Passage clients, the Router uses two methods. (Virtual Passage is an ActiveX-based VPN client that provides full network connectivity for Windows users. It allows remote access to the Router's network through a secure connection.)

First, when the DHCP and Virtual Passage clients receive dynamic IP addresses from the Router, it automatically includes the information of the WINS server to support NetBIOS. Second, if a user sets up a static IP address, then the IP address, subnet mask, default gateway, and DNS server settings must be configured on the Internet Protocol (TCP/IP) screen of the Windows operating system. Then the WINS IP address must be configured on the advanced TCP/IP screen. (For more information, refer to Windows Help.)

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

DHCP > Status

On the *Status* screen, view the status information for the DHCP server and its clients.

DHCP > Status

Status

For the DHCP server, the following information is shown:

DHCP Server This is the IP address of the DHCP server.

Dynamic IP Used It shows the number of dynamic IP addresses used.

DHCP Available This indicates the number of dynamic IP addresses available.

Total It shows the total number of dynamic IP addresses that can be assigned by the DHCP server.

Client Table

For all network clients using the DHCP server, the Client Table shows the current DHCP Client information:

Client Host Name This is the name assigned to a client host.

IP Address It is the dynamic IP address assigned to a client.

MAC Address This indicates the MAC address of a client.

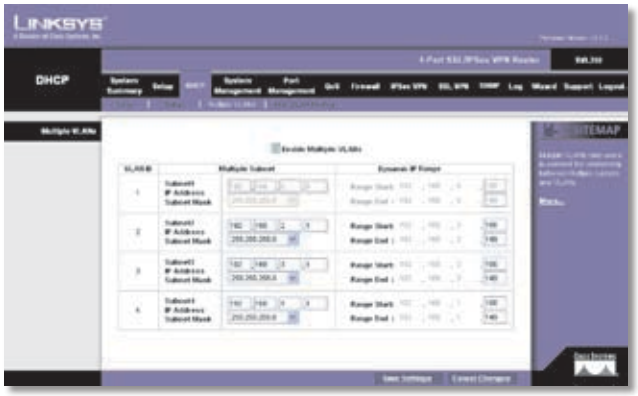
Leased Time It displays the amount of time a network user will be allowed connection to the Router with their current dynamic IP address.

Delete Click the **Trash Can** icon to delete a DHCP client, and the client host's IP address will be released.

Click **Refresh** to refresh the on-screen information.

DHCP > Multiple VLANs

Use this screen to establish relationships between multiple subnets and Virtual Local Area Networks (VLANs).



DHCP > Multiple VLANs

Multiple VLANs

Enable Multiple VLANs Select this option to establish a relationship between multiple subnets and VLANs. If you enable this option and the multiple subnets and VLANs are not enabled, then the Router will prompt you to configure and enable the multiple subnets and VLANs.

VLAN ID The VLANs are configured on the *Port Management* > *Create VLAN* screen (by default, all VLANs created on this screen are part of the default subnet). The VLAN IDs you assigned are displayed on the *Multiple VLANs* screen.

Multiple Subnet Multiple subnets define different IP networks using the subnet mask. They are created after multiple VLANs are created. (If you want to change the settings of VLAN 1, then use the *Setup* > *Network* screen

to configure the Device IP Address and Subnet Mask settings.)

- **Subnet1-4** The subnet numbers are created according to the VLAN numbers. (The multiple subnets can also be configured on the *Setup* > *Network* screen.)
- **IP Address** Enter an IP address.
- **Subnet Mask** Select the appropriate subnet mask.

Dynamic IP Range When the IP Address and Subnet Mask settings are configured, the range of IP addresses is displayed. You can change the range of IP addresses as long as the total number of IP addresses assigned by DHCP is 253. The greater the number of multiple subnets, the fewer the number of IP addresses assigned by DHCP.

NOTE: The Router's built-in DHCP server can assign up to 253 IP addresses.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

DHCP > Inter-VLAN Routing

To route packets between different VLANs, enable the Multiple VLANs option on the *Multiple VLANs* screen, and then select the VLANs on the *Inter-VLAN Routing* screen.

DHCP > Inter-VLAN Routing

Inter-VLAN Routing

VLAN1-4 Select the VLANs that can route packets to each other. For example, if you select VLAN1 and VLAN2, then packets can be routed between VLAN1 and VLAN2, but packets cannot be routed between VLAN3 and VLAN4.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

System Management > Diagnostic

The Router has two built-in tools, DNS Name Lookup and Ping, which are used for troubleshooting network problems.

The Internet has a service called the Domain Name Service (DNS), which allows users to enter an easily remembered host name, such as www.linksys.com, instead of numerical TCP/IP addresses to access Internet resources. The DNS Name Lookup tool will return the numerical TCP/IP address of a host name.

The Ping test bounces a packet off a machine on the Internet back to the sender. This test shows if the Router is able to contact the remote host. If users on the LAN are having problems accessing services on the Internet, try pinging the DNS server or other machine at the ISP's location. If this test is successful, try pinging devices outside the ISP. This will show if the problem lies with the ISP's connection.

Diagnostic

DNS Name Lookup/Ping Select which tool you want to use, **DNS Name Lookup** or **Ping**. Then proceed to the appropriate instructions.

DNS Name Lookup

Before using this tool, make sure the IP address of the DNS server is entered on the *Setup* > *Network* screen; otherwise, this tool will not work.

System Management > Diagnostic > DNS Name Lookup

Look up the name Enter the host name, and click **Go**. (Do not add the prefix http:// or else you will get an error message.) The Router will then query the DNS server and display the result at the bottom of the screen.

Ping

Before using this tool make sure you know the device or host's IP address. If you do not know it, use the Router's DNS Name Lookup tool to find the IP address.

System Management > Diagnostic > Ping

Ping host or IP address Enter the IP address of the device being pinged, and click **Go**. The test will take a few seconds to complete. When completed, the Router will display the results at the bottom of the screen. The results include this information: status; number of packets transmitted, received, or lost; and round trip time (minimum, maximum, and average).

System Management > Factory Default

Use this screen to clear all of your configuration information and restore the Router to its factory default settings. Only use this feature if you wish to discard all the settings and preferences that you have configured.

System Management > Factory Default

Factory Default

Return to Factory Default Setting Click **Return to Factory Default Setting** if you want to restore the Router to its factory default settings. After clicking the button, a confirmation screen appears. Click **OK** to continue.

System Management > Firmware Upgrade

You can use this feature to upgrade the Router's firmware to the latest version.

System Management > Firmware Upgrade

Firmware Upgrade

To download the firmware, refer to the Firmware Download instructions. If you have already downloaded the firmware onto your computer, then click the **Browse** button to look for the file.

NOTE: If you are using Internet Explorer on Windows XP, disable the pop-up blocking function before you upgrade the Router's firmware. Refer to "Appendix O: Firmware Upgrade" for more information.

Firmware Upgrade Right Now After you have selected the file, click **Firmware Upgrade Right Now**.

NOTE: The Router will take approximately ten minutes to upgrade its firmware. During this process, do not power off the Router or press the Reset button.

Firmware Download

Firmware Download from Linksys Web Site If you need to download the latest version of the Router's firmware, click **Firmware Download from Linksys Web Site**. The Support page of the Linksys website appears.

Select **4-Port SSL/IPSec VPN Router** from the drop-down menu, and choose the firmware from the available options. After downloading the firmware file, extract it on your computer. Then follow the Firmware Upgrade instructions.

For more details, refer to "Appendix O: Firmware Upgrade".

System Management > Restart

If you need to restart the Router, Linksys recommends that you use the Restart tool on this screen. When you restart

from the *Restart* screen, then the Router will send out your log file before it is reset.

System Management > Restart

Restart

Restart Router Click **Restart Router** to restart the Router.

System Management > Setting Backup

This screen allows you to make a backup file of your preferences file for the Router. To save the backup file, you need to export the configuration file. To use the backup preferences file, you need to import the configuration file.

System Management > Setting Backup

Import Configuration File

To import a configuration file, first specify where your backup preferences file is located. Click **Browse**, and then select the appropriate configuration file.

Import After you select the file, click **Import**. This process may take up to a minute. Then restart the Router so that the changes will take effect.

Export Configuration File

Export To export the Router's current configuration file, click **Export**, and then select the location where you would like to store your backup preferences file. This file will be called **RVL200.exp** by default, but you may rename it if you wish. This process may take up to a minute.

System Management > Port Mirroring

Port Mirroring monitors and copies network traffic by transferring copies of incoming and outgoing packets from source ports to a target port. This feature is used as a monitoring, diagnostic, and debugging tool.

System Management > Port Mirroring

Port Mirroring

Enable Port Mirroring Select this option to use Port Mirroring.

Source Port Select the port whose traffic will be captured by a target (mirror) port. The Source Port can be any LAN port or the WAN port.

Target Port Select the mirror port. (Only one LAN port can be set as a mirror port.)

Mode Select the port mode configuration. Keep the default, **Rx Only**, to use port mirroring on receiving ports. Select **Tx Only** to use port mirroring on transmitting ports. Select **Both** to use port mirroring on both receiving and transmitting ports.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of four. To delete an entry, select it and click **Delete**.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

System Management > IGMP Snooping

IGMP Snooping uses IGMP to forward the multicast traffic of a group to ports that are members of that group.

System Management > IGMP Snooping

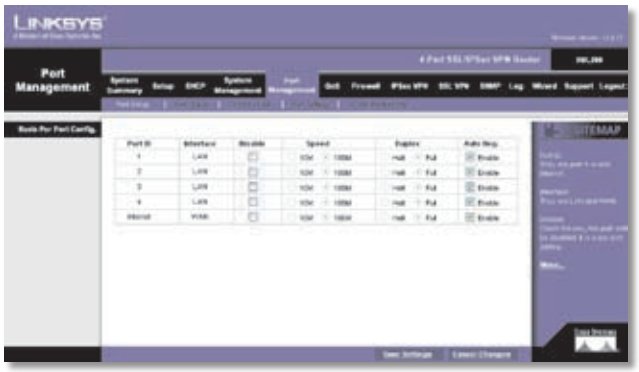
Enable IGMP Snooping Select this option to use IGMP Snooping.

Timeout Enter the time interval during which IGMP broadcast packets from the IGMP server are sent to the IGMP clients behind a specific port of the Router. If the time interval has past, IGMP broadcast packets are broadcast to all ports of the Router. After the timeout, the time interval will restart if the Router receives IGMP broadcast packets that need to sent to the IGMP clients. The default is **248** seconds.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Port Management > Port Setup

Configure the connection settings for each local port, such as priority, speed, and duplex. You can also enable or disable the auto-negotiation feature for all ports.



Port Management > Port Setup

Basic Per Port Config.

The Basic Per Port Config. table displays the following:

Port ID The port number or name is displayed.

Interface The port's interface type, LAN or WAN, is displayed.

Disable To disable a port, select **Disable**.

Speed Select the port speed, **10M** or **100M**.

Duplex Select the duplex mode, **Half** or **Full**.

Auto Neg. Select **Enable** if you want the Router's ports to auto-negotiate connection speeds and duplex mode; then you will not need to set up speed and duplex settings separately.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Port Management > Port Status

Status information is displayed for the selected port.

Port Management > Port Status

Port ID To see the status information and settings for a specific port, select its ID number or name.

Port Status

Summary

For the selected port, the Summary table displays the following:

Type The port type is displayed.

Interface The interface type, LAN or WAN, is displayed.

Link Status The status of the connection is displayed.

Port Activity The status of the port is displayed.

Speed Status The speed of the port, 10 Mbps, or 100 Mbps, is displayed.

Duplex Status The duplex mode is displayed, Half or Full.

Auto negotiation The status of the feature is displayed.

Statistics

For the selected port, the Statistics table displays the following:

Port Receive Packet Count The number of packets received is displayed.

Port Receive Packet Byte Count The number of packet bytes received is displayed.

Port Transmit Packet Count The number of packets transmitted is displayed.

Port Transmit Packet Byte Count The number of packet bytes transmitted is displayed.

Port Packet Error Count The number of packet errors is displayed.

Click **Refresh** to retrieve the most recent settings and statistics.

Port Management > Create VLAN

Use this screen to create a Virtual Local Area Network (VLAN), a group of ports that can be located anywhere in the network, but they communicate as though they belong to the same physical segment. VLANs can be easily organized to reflect departmental groups (such as sales or engineering), usage groups (such as e-mail), or multicast groups (such as users of multimedia applications, including videoconferencing).

Port Management > Create VLAN

Create VLAN

The Router supports up to 15 VLANs, excluding the default VLAN.

Enable VLAN Select **Enable VLAN** to use the VLAN feature.

When the VLAN feature has been enabled, the default VLAN ID 1 will be displayed and applied. You can create a single VLAN or create multiple VLANs by range.

VLAN ID Enter a VLAN ID number from 2 to 4094. (The default VLAN ID 1 is assigned to untagged frames received on the interface.) Click **Add VLAN** to add the single VLAN ID.

VLAN ID Range Enter the starting and ending port numbers of the VLAN ID Range. Then click **Add Range**.

VLAN ID and Description All of the VLAN IDs that you have set up and the VLAN descriptions you have defined for each VLAN on the *VLAN Membership* screen will be applied and displayed on the *Create VLAN* screen.

Delete VLAN To delete a VLAN, select it from the list and click **Delete VLAN**.

Port Management > Port Setting

Select the mode and configure the Port VLAN Identifier (PVID) for each LAN port of the Router.

Port Management > Port Setting

Port Setting

Port ID The Router's LAN ports are numbered 1 to 4.

Mode Select the appropriate mode: **General**, **Access** (default), or **Trunk**. For a General port, the transmitted frames can be tagged or untagged, and it will be defined on the *VLAN Membership* screen. For an Access port, the transmitted frames will be untagged. A port configured as a Trunk port acts as a direct link between two switches. The transmitted frames will be tagged to identify the source VLAN, but the frames belonging to the default VLAN will be untagged.

PVID Enter the PVID assigned to untagged frames received on the interface. The default is **1**.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Port Management > VLAN Membership

Use this screen to define the members of a VLAN.

Port Management > VLAN Membership

VLAN Membership

VLAN ID Select the VLAN ID number that you configured on the *Create VLAN* screen.

Description Enter the VLAN group name. You can use up to 50 characters.

For the default VLAN 1, all ports will be set to Access mode and all frames will be UnTagged.

For the Router's four ports, select the appropriate mode:

Access Select this mode if you want the port to be UnTagged or Excluded.

Trunk Select this mode if you want the port to be Tagged, UnTagged, or Excluded.

General Select this mode if you want the port to be Tagged, UnTagged, or Excluded.

For the Router's four ports, select the appropriate port type:

UnTagged Select this type if you want the port to be UnTagged.

Tagged Select this type if you want the port to be Tagged.

Exclude Select this type if you want the port to be excluded from the selected VLAN.

Port VLAN Summary

The Port VLAN Summary table lists the settings for the selected VLAN:

Port ID The Router's LAN ports are listed in this column.

Port VLAN Summary The Tagged (T) or UnTagged (U) status for each port is displayed in this column.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

QoS > Bandwidth Management

Quality of Service (QoS) features let you control how the Router manages network traffic. With Bandwidth Management (Layer 3), the Router can provide better service to selected types of network traffic. There are two types of functionality available, and only one type can work at one time. Rate Control functionality is for minimum (guaranteed) bandwidth and maximum bandwidth by service or IP address, while Priority functionality is for services. Both types can control inbound or outbound traffic.

QoS > Bandwidth Management > Rate Control

Bandwidth Management

Bandwidth

Interface The WAN interface is automatically selected.

Upstream Enter the maximum upstream bandwidth provided by your ISP. The default is **512** kbit/sec.

Downstream Enter the maximum downstream bandwidth provided by your ISP. The default is **512** kbit/sec.

Bandwidth Management Type

Type Select the type of functionality you want to use, **Rate Control** or **Priority**. Rate Control functionality is for minimum (guaranteed) bandwidth and maximum (limited) bandwidth by service or IP address, while Priority functionality is for services. Then proceed to the instructions for the type you selected.

Rate Control

Service Select the Service you want.

If the Service you need is not listed in the menu, click **Service Management** to add the new service. The *Service Management* screen appears.

Service Management

Service Name Enter a name.

Protocol Select the protocol it uses.

Port Range Enter its range.

Click **Add to List**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Bandwidth Management* screen.

If you want to modify a service you have created, select it and click **Update this service**. Make changes. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Bandwidth Management* screen.

If you want to delete a service you have created, select it and click **Delete selected service**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Bandwidth Management* screen.

IP Enter the IP address or range you need to control. To include all internal IP addresses, keep the default, **0**.

Direction Select **Upstream** for outbound traffic, or select **Downstream** for inbound traffic.

Min. Rate Enter the minimum rate for the guaranteed bandwidth.

Max. Rate Enter the maximum rate for the maximum bandwidth.

Enable Select **Enable** to use this Rate Control rule.

Click **Add to List**, and configure as many rules as you would like, up to a maximum of 100. To delete a rule, select it and click **Delete selected application**.

Click **Summary** to see a summary of the Rate Control rules.

Summary (Rate Control Selected)

To change a rule, click **Edit**. To update the list, click **Refresh**. To return to the *Bandwidth Management* screen, click **Close**.

On the *Bandwidth Management* screen, click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Priority

QoS > Bandwidth Management > Priority

Service Select the Service you want.

If the Service you need is not listed in the menu, click **Service Management** to add the new service. The *Service Management* screen appears.

Service Management

Service Name Enter a name.

Protocol Select the protocol it uses.

Port Range Enter its range.

Click **Add to List**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Bandwidth Management* screen.

If you want to modify a service you have created, select it and click **Update this service**. Make changes. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Bandwidth Management* screen.

If you want to delete a service you have created, select it and click **Delete selected service**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Bandwidth Management* screen.

Direction Select **Upstream** for outbound traffic, or select **Downstream** for inbound traffic.

Priority Select **High**, **Middle**, or **Low**. High priority services will share 60% of the total system bandwidth, while Low priority services will share 10% of the total bandwidth. The default is **Middle**.

Enable Select **Enable** to use this Priority rule.

Click **Add to List**, and configure as many rules as you would like, up to a maximum of 50. To delete a rule, select it and click **Delete selected application**.

Click **Summary** to see a summary of the Priority rules. The *Summary* screen appears.

Summary (Priority Selected)

To change a rule, click **Edit**. To update the list, click **Refresh**. To return to the *Bandwidth Management* screen, click **Close**.

On the *Bandwidth Management* screen, click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

QoS > QoS Setup

The *QoS Setup* screen lets you enable QoS and configure Trust Mode and Class of Service (CoS) settings.

QoS > QoS Setup

QoS Setup

QoS Mode

QoS Mode Select the appropriate mode, **Disable** or **Basic**. The default is **Disable**, which indicates no priority. If the Basic mode is selected, the Router will apply the settings configured on the *QoS Setup*, *Queue Settings*, and *DSCP Settings* screens.

Trust Mode Default CoS

Configure the Trust Mode and Default CoS priority values for each LAN port.

Port ID The ID numbers of the Router's four LAN ports are displayed in this column.

Trust Mode Select the appropriate mode: **None**, **CoS**, or **DSCP**. The default is **None**.

None

If the None option is selected, then the Router prioritizes each packet based on the required level of service for its four LAN ports, using four priority queues with strict or Weighted Round Robin (WWR) queuing. You can use these functions to assign independent priorities for delay-sensitive data and best-effort data.

When a port is set to None mode, then the Router will not check CoS VLAN tag priority or DSCP/ToS priority bits in the IP header.

CoS

If the CoS option is selected, then the Router will use CoS-based QoS in Layer 2. This type of QoS lets you specify which data packets have higher priority when traffic is buffered due to congestion. Data packets in high priority queues will be transmitted before those in the lower priority queues. You can map eight priority levels to the Router's input queues. If the port is configured as CoS mode, then the order of importance for the application of priority rules are as follows: 1) CoS, 2) DSCP, and 3) None (port-based priority).

DSCP

If the Differentiated Services Code Point (DSCP) option is selected, then the Router will use DSCP-based QoS in Layer 3. Traffic priorities can be specified in the IP header of a frame. With DSCP-based QoS, the Router can use the priority bits in the Type of Service (ToS) octet to prioritize traffic. If priority bits are used, the ToS octet may contain three bits for IP Precedence or six bits for DSCP service. If the port is configured as DSCP mode, then the order of importance for the application of priority rules are as follows: 1) DSCP, 2) CoS, and 3) None (port-based priority).

Default CoS Select the default CoS priority value, 0 to 7, with 0 being the lowest priority.

CoS Settings

Priority This is the CoS value, 0 to 7 (7 is the highest priority).

Queue Select the traffic forwarding queue number to which the CoS priority is mapped. You can designate up to four traffic priority queues configured on the *Queue Settings* screen.

To reset the CoS queue settings to their factory defaults, click **Restore Defaults**. The defaults are **2**, **1**, **1**, **2**, **3**, **4**, and **4** for the Priority values, 0 to 7.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

QoS > Queue Settings

You can set the Router to service the queues based on a strict rule that requires all traffic in a higher priority queue to be processed before lower priority queues are serviced, or you can set the Router to use Weighted Round Robin (WWR) queuing, which specifies a relative weight of each queue. WRR uses a predefined relative weight for each queue, which determines the percentage of service time the Router services each queue before moving on to the next queue. This prevents head-of-line blocking, which can occur with strict priority queuing.

QoS > Queue Settings

Queue Settings

Queue The number of the queue, 1 to 4, is displayed (4 is the highest priority queue).

Strict Priority With Strict Priority, the Router services the egress queues in sequential order, so all traffic in the higher priority queues is transmitted before the lower priority queues are serviced. To base traffic scheduling on queue priority, select **Strict Priority**. The WRR Weight will be 1, 2, 4, and 8, respectively, for queues 1 to 4.

WRR With WRR, the Router shares bandwidth at the egress ports using scheduling weights 1, 2, 4, and 8, respectively, for queues 1 to 4. If you want to use WRR queuing, select **WRR**.

WRR Weight If you selected WRR, set a new weight for the selected traffic class, within the range of 1 to 15. (Queue 1 is fixed at a weight of 1, and it cannot be changed.)

% of WRR Bandwidth This is the percentage of bandwidth used by WRR. This automatically changes if you change the WRR Weight for a queue.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

QoS > DSCP Settings

Traffic priorities can be specified in the IP header of a frame. With Differentiated Services Code Point (DSCP)-

based QoS in Layer 3, the Router can use the priority bits in the Type of Service (ToS) octet to prioritize traffic. If priority bits are used, the ToS octet may contain three bits for IP Precedence or six bits for DSCP service.

QoS > DSCP Settings

DSCP Settings

DSCP to Queue

DSCP This is the DSCP value in the incoming packet.

Queue Select the traffic forwarding queue number to which the DSCP priority is mapped. You can designate up to four traffic priority queues configured on the *Queue Settings* screen.

To reset this screen to the factory default queue settings, click **Restore Defaults**. The defaults are **1** for DSCP values 0-15, **2** for DSCP values 16-31, and **3** for DSCP values 32-63.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Firewall > General

Enable or disable a variety of firewall, security, and web features.

Firewall > General

General

Firewall The firewall is enabled by default. If you disable it, then the SPI, DoS, and Block WAN Request features, Access Rules, and Content Filters will also be disabled, and the Remote Management feature will be enabled.

SPI (Stateful Packet Inspection) This option is enabled by default. The Router's firewall uses Stateful Packet Inspection to review the information that passes through the firewall. It inspects all packets based on the established connection, prior to passing the packets for processing through a higher protocol layer.

DoS (Denial of Service) This option is enabled by default. It protects internal networks from Internet attacks, such as SYN Flooding, Smurf, LAND, Ping of Death, IP Spoofing, and reassembly attacks.

Block WAN Request This option is enabled by default. Using this feature, the Router drops both unaccepted TCP request and ICMP packets from the WAN side. Hackers will not find the Router by pinging the WAN IP address.

Remote Management/SSL VPN This option is disabled by default. If you want to use SSL or manage this Router through a WAN connection, first change the password on the *Setup* > *Password* screen (this prevents any user from accessing the Router or using SSL with the default password). Then select **Enable** for the Remote Management/SSL VPN setting.

NOTE: SSL VPN has higher priority than Port Forwarding when HTTPS is enabled.

HTTPS If Remote Management/SSL VPN is enabled, HTTPS is enabled by default. If Remote Management/SSL VPN is disabled, HTTPS is disabled by default.

NOTE: SSL VPN has higher priority than Port Forwarding when HTTPS is enabled.

HTTP To allow HTTP connections for remote management, select **Enable**. Otherwise, select **Disable**. Then enter the port number you want to use for remote management (port 80 or 8080 is usually used).

Multicast Pass Through This option is disabled by default. IP multicasting occurs when a single data transmission is sent to multiple recipients at the same time. Using this feature, the Router allows IP multicast packets to be forwarded to the appropriate LAN devices. Multicast Pass Through is used for Internet games, videoconferencing, and multimedia applications.

SIP Application Layer Gateway This option is enabled by default. It enables use of Session Initiation Protocol (SIP), an application-layer control (signaling) protocol for Internet phone calls, multimedia conferences, and instant messaging.

Restrict WEB Features

Block Select the filters you want to use.

- **Java** Java is a programming language for websites. If you deny Java applets, you run the risk of losing access to Internet sites created using this programming language. To block Java applets, select **Java**.
- **Cookies** A cookie is data stored on your PC and used by Internet sites when you interact with them. To block cookies, select **Cookies**.
- **ActiveX** ActiveX is a programming language for websites. If you deny ActiveX, you run the risk of losing access to Internet sites created using this programming language. To block ActiveX, select **ActiveX**.
- **Access to HTTP Proxy Servers** Use of WAN proxy servers may compromise the Router's security. If you block access to HTTP proxy servers, then you block access to WAN proxy servers. To block access, select **Access to HTTP Proxy Servers**.

Don't block Java/ActiveX/Cookies/Proxy to Trusted Domains To keep trusted sites unblocked, select this option.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Firewall > Access Rules

Access rules evaluate network traffic to decide whether or not it is allowed to pass through the Router's firewall. Access Rules look specifically at a data transmission's source IP address, destination IP address, and IP protocol type, and you can apply each access rule according to a different schedule.

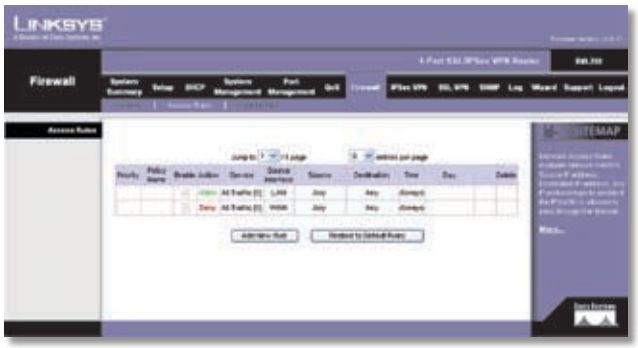
With the use of custom rules, it is possible to disable all firewall protection or block all access to the Internet, so use extreme caution when creating or deleting access rules.

The Router has the following default rules:

- All traffic from the LAN to the WAN is allowed.
- All traffic from the WAN to the LAN is denied.

Custom rules can be created to override the above default rules, but there are four additional default rules that will be always active and cannot be overridden by any custom rules.

- HTTP service from the LAN to the Router is always allowed.
- DHCP service from the LAN is always allowed.
- DNS service from the LAN is always allowed.
- Ping service from the LAN to the Router is always allowed.



Firewall > Access Rules

Access Rules

Except for the default rules, all configured access rules are listed in the Access Rules table, and you can set the priority for each custom rule. The Access Rules table lists the following information for each access rule:

Priority The Priority is displayed.

Policy Name The name of the access rule is displayed.

Enable The status of the access rule is displayed.

Action The Action, Allow or Deny, is displayed.

Service The Service is displayed.

Source Interface The Source Interface, LAN or WAN, is displayed.

Source The specific Source is displayed.

Destination The specific Destination is displayed.

Time The time interval to which the access rule applies is displayed.

Day The days to which the access rule applies is displayed.

Click **Edit** to edit an access rule, and click the **Trash Can** icon to delete an access rule. If the Access Rules table has multiple pages, select a different page to view from the *Jump to* drop-down menu. If you want more or fewer entries listed per page, select a different number from the *entries per page* drop-down menu.

Click **Add New Rule** to add new access rules, and the *Add a New Access Rule* screen appears.

Click the **Restore to Default Rules** to restore the default rules and delete the custom access rules.

Add a New Access Rule

Add a New Access Rule

Services

Policy Name Enter a name for the new access rule.

Action Select **Allow** or **Deny**, depending on the purpose of the access rule.

Service Select the Service you want.

If the Service you need is not listed in the menu, click **Service Management** to add the new service. The *Service Management* screen appears.

Service Management

Service Name Enter a name.

Protocol Select the protocol it uses.

Port Range Enter its range.

Click **Add to List**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Add a New Access Rule* screen.

If you want to modify a service you have created, select it and click **Update this service**. Make changes. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Add a New Access Rule* screen.

If you want to delete a service you have created, select it and click **Delete selected service**. Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Add a New Access Rule* screen.

Log The Router can keep a log tracking this type of activity. To keep a log, select **Log packets match this access rule**. If you do not want a log, select **Not log**.

NOTE: If the Deny Policies option is enabled on the *Log* > *System Log* screen, then the log will not include log events from the Deny access rules on the *Firewall* > *Access Rules* screen. Log events from the Deny access rules will be logged separately from Deny Policies if the option, Log packets match this rule, is selected.

If the Allow Policies option is enabled on the *Log* > *System Log* screen, then the log will include log events from the Allow access rules on the *Firewall* > *Access Rules* screen, regardless of the option, Log packets match this rule.

Source Interface Select **WAN**, **LAN**, or **Any**.

Source Select the Source IP address(es) for the access rule. If it can be any IP address, select **Any**. If it is one IP address, select **Single** and enter the IP address. If it is a range of IP addresses, select **Range**, and enter the starting and ending IP addresses in the *Addr. Range Begin* and *Addr. Range End* fields. If the Source is all IP addresses, then enter * in the *Addr. Range Begin* field.

Destination Select the Destination IP address(es) for the access rule. If it can be any IP address, select **Any**. If it is one IP address, select **Single** and enter the IP address. If it is a range of IP addresses, select **Range**, and enter the starting and ending IP addresses in the *Addr. Range Begin* and *Addr. Range End* fields.

Scheduling

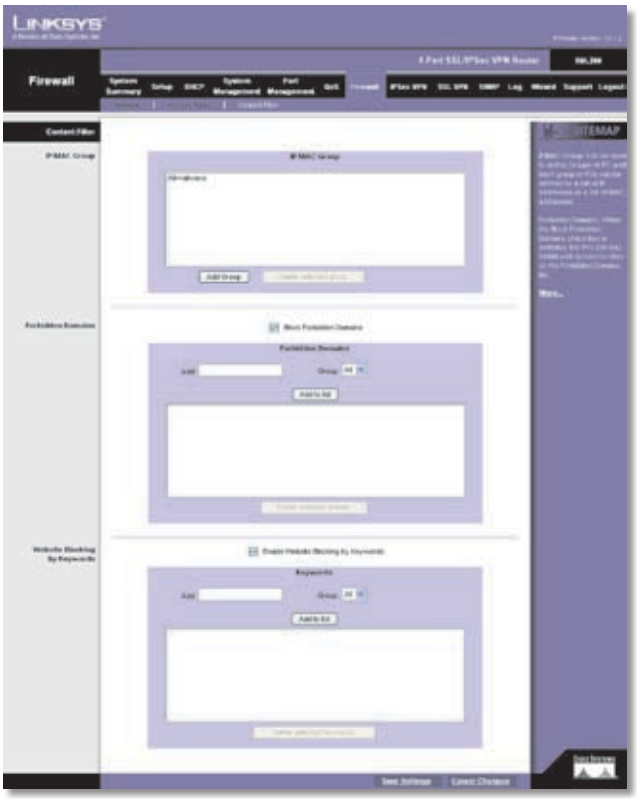
Apply this rule Decide when you want the access rule to be enforced, and enter the hours and minutes in 24-hour format. The default condition for any new rule is to **always** enforce it.

Decide which days of the week you want the access rule to be enforced, and select the appropriate days.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Return** to return to the *Access Rules* screen.

Firewall > Content Filter

Use this screen to block specific domains during the designated days and times for specific devices.



Firewall > Content Filter

Content Filter

IP/MAC Group

You can apply the content filter to specific groups of computers. You can have up to 10 groups, and each group can have up to 50 computers.

To create a group of computers, click **Add Group**. The *Add Group* screen appears.

Add Group

Group Name Enter a name for the new group.

Show unknown IP/MAC addresses If you do not know a computer's IP or MAC address, click **Show unknown IP/MAC addresses**. The Unknown MAC Address List appears.

Unknown IP Address List

IP Address

Select this option to view all LAN IP addresses.

IP Address The IP address is displayed.

Name Enter a name for the device.

Enable Select **Enable** to select a device.

MAC Address

Select this option to view all MAC addresses.

MAC Address The MAC address is displayed.

Name Enter a name for the device.

Enable Select **Enable** to select a device.

Click **Apply** to add the IP or MAC addresses to the group. Click **Select All** to add all IP and MAC addresses. Click **Refresh** to update the on-screen information. Click **Close** to exit this screen and return to the *Add Group* screen.

Scheduling Decide when you want the content filter to be enforced, and enter the hours and minutes in 24-hour format. The default condition for any new content filter is to **always** enforce it.

Decide which days of the week you want the content filter to be enforced, and select the appropriate days.

Name Enter a name for a specific computer.

Type Select IP Address or MAC Address.

IP Address If you selected IP Address, enter the IP address in the fields provided.

MAC Address If you selected MAC Address, enter the MAC address in the fields provided.

To add an entry, click **Add to list**. To remove an entry from the list, select the entry, and click the **Delete selected entry**.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them. Click **Exit** to return to the *Content Filter* screen.

To delete a group, select it and click **Delete selected group** on the *Content Filter* screen. To change the settings of a group, select it and click **Edit Group**.

Forbidden Domains

Block Forbidden Domains When this option is selected, the Router will forbid access to websites on the Forbidden Domains list.

Add To add a domain to the list, enter the address of the domain.

Group Select the appropriate Group to which the Block Forbidden Domains filter should apply.

To add a domain, click **Add to list**. To remove a domain from the list, select the domain, and click **Delete selected domain**.

Website Blocking by Keywords

Enable Website Blocking by Keywords When this option is selected, the Router will forbid access to websites using keywords on the Keywords list.

Add To add a keyword to the list, enter the address of the domain.

Group Select the appropriate Group to which the Website Blocking by Keyword filter apply.

To add a keyword, click **Add to list**. To remove a keyword from the list, select the keyword, and click **Delete selected domain**.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

IPSec VPN > Summary

This screen displays general information about the Router's IPSec VPN tunnel settings. The Router supports a single Gateway-to-Gateway tunnel, which is a tunnel created between two VPN Routers or other VPN devices.

IPSec VPN > Summary

Summary

Tunnel Used The number of VPN tunnels being used is displayed.

Tunnel Available The number of available VPN tunnels is displayed.

Tunnel Status

Add New Tunnel Click **Add New Tunnel** to add a Gateway-to-Gateway tunnel. The *Mode Choose* screen appears.

Mode Choose

Click **Add Now** to display the *Gateway to Gateway* screen. Proceed to the "IPSec VPN > Gateway to Gateway" section for instructions. Click **Return** to return to the *Summary* screen.

After you have added the VPN tunnel, you will see it listed in the table.

No. It shows the number of the VPN tunnel.

Name It shows the Tunnel Name that you gave the VPN tunnel.

Status This indicates the status of the VPN tunnel.

Phase2 Enc/Auth/Grp This shows the Phase 2 Encryption type (DES/3DES/AES-128/AES-192/AES-256), Authentication method (MD5/SHA1), and DH Group number (1/2/5) that you chose in the IPSec Setup section.

Local Group This shows the IP address and subnet mask of the Local Group.

Remote Group The IP address and subnet mask of the Remote Group are displayed here.

Remote Gateway It shows the IP address of the Remote Gateway.

Tunnel Test Click **Connect** to verify the status of the VPN tunnel. The test result will be updated in the Status column. If the tunnel is connected, a Disconnect button will be available so you can end the connection.

Config. Click **Edit** to open a new screen where you can change the tunnel's settings. Refer to the "Gateway to Gateway" section for more information. Click the **Trash Can** icon to delete all of your tunnel settings for each individual tunnel.

Tunnel Enabled The number of enabled VPN tunnels is displayed.

Tunnel Defined The number of defined VPN tunnels is displayed.

IPSec VPN > Gateway to Gateway

Use this screen to create a new tunnel between two VPN devices.

IPSec VPN > Gateway to Gateway

Add a New Tunnel

Tunnel No The tunnel number is 1.

Tunnel Name Enter a name for this VPN tunnel, such as Los Angeles Office, Chicago Branch, or New York Division. This allows you to identify multiple tunnels and does not have to match the name used at the other end of the tunnel.

Enable Check this box to enable a VPN tunnel. (When you create a VPN tunnel, this check box will be disabled.)

Local Group Setup

Local Security Gateway Type

Select the type you want to use: **IP Only**, **IP + Domain Name(FQDN) Authentication**, **IP + E-mail Addr.(USER**

FQDN) Authentication, **Dynamic IP + Domain Name(FQDN) Authentication**, or **Dynamic IP + E-mail Addr.(USER FQDN) Authentication**. Follow the instructions for the type you want to use.

NOTE: The Local Security Gateway Type you select should match the Remote Security Gateway Type selected on the VPN device at the other end of the tunnel.

IP Only

The default is **IP Only**. Only the computer with a specific IP address will be able to access the tunnel.

IP address The WAN (or Internet) IP address of the Router will automatically appear.

IP + Domain Name(FQDN) Authentication

The FQDN and IP address must match the Remote Security Gateway of the remote VPN device, and they can only be used for one tunnel connection.

Domain Name Enter the Fully Qualified Domain Name (FQDN), which is the host name and domain name for a specific computer on the Internet.

IP address The WAN (or Internet) IP address will automatically appear.

IP + E-mail Addr.(USER FQDN) Authentication

E-mail address Enter the e-mail address for authentication.

IP address The WAN (or Internet) IP address will automatically appear.

Dynamic IP + Domain Name(FQDN) Authentication

The Local Security Gateway will be a dynamic IP address, so you do not need to enter the IP address. When the Remote Security Gateway requests to create a tunnel with the Router, the Router will work as a responder.

The domain name must match the Remote Security Gateway of the remote VPN device and can only be used for one tunnel connection.

Domain Name Enter the domain name for authentication. (Once used, you cannot use it again to create a new tunnel connection.)

Dynamic IP + E-mail Addr.(USER FQDN) Authentication

The Local Security Gateway will be a dynamic IP address, so you do not need to enter the IP address. When the Remote Security Gateway requests to create a tunnel with the Router, the Router will work as a responder.

E-mail address Enter the e-mail address for authentication.

Local Security Group Type

Select the local LAN user(s) behind the Router that can use this VPN tunnel. Select the type you want to use: **IP**, **Subnet**, or **IP Range**. Follow the instructions for the type you want to use.

NOTE: The Local Security Group Type you select should match the Remote Security Group Type selected on the VPN device at the other end of the tunnel.

After you have selected the Local Security Group Type, the settings available on this screen may change, depending on which selection you have made.

IP

Only the computer with a specific IP address will be able to access the tunnel.

IP address Enter the appropriate IP address. The default IP is **192.168.1.0**.

Subnet

The default is **Subnet**. All computers on the local subnet will be able to access the tunnel.

IP address Enter the IP address. The default is **192.168.1.0**.

Subnet Mask Enter the subnet mask. The default is **255.255.255.0**.

IP Range

Specify a range of IP addresses within a subnet that will be able to access the tunnel.

IP range Enter the range of IP addresses. The default is **192.168.1.0~254**.

Remote Group Setup

Before you configure the Remote Group Setup, make sure your VPN tunnel will have two different IP subnets. For example, if the local 4-Port SSL/IPSec VPN Router has an IP scheme of 192.168.1.x (x being a number from 1 to 254), then the remote VPN router should have a different IP scheme, such as 192.168.2.y (y being a number from 1 to 254). Otherwise, the IP addresses will conflict, and the VPN tunnel cannot be created.

Remote Security Gateway Type

Select the type you want to use: **IP Only**, **IP + Domain Name(FQDN) Authentication**, **IP + E-mail Addr.(USER FQDN) Authentication**, **Dynamic IP + Domain Name(FQDN) Authentication**, or **Dynamic IP + E-mail Addr.(USER FQDN) Authentication**. Follow the instructions for the type you want to use.

NOTE: The Remote Security Gateway Type you select should match the Local Security Gateway Type selected on the VPN device at the other end of the tunnel.

IP Only

The default is **IP Only**. Only the computer with a specific IP address will be able to access the tunnel. Select **IP address** or **IP by DNS Resolved**.

IP address Select this option if you know the static IP address of the remote VPN device at the other end of the tunnel, and then enter the IP address.

IP by DNS Resolved Select this option if you do not know the static IP address of the remote VPN device but you do know its domain name. Then enter the remote VPN device's domain name on the Internet. The Router will retrieve the IP address of the remote VPN device.

IP + Domain Name(FQDN) Authentication

The IP address and domain name ID must match the Local Gateway of the remote VPN device, and they can only be used for one tunnel connection.

IP address Select this option if you know the static IP address of the remote VPN device at the other end of the tunnel, and then enter the IP address.

IP by DNS Resolved Select this option if you do not know the static IP address of the remote VPN device but you do know its domain name. Then enter the remote VPN device's domain name on the Internet. The Router will retrieve the IP address of the remote VPN device.

Domain Name Enter the domain name as an ID (it cannot be a real domain name on the Internet).

IP + E-mail Addr.(USER FQDN) Authentication

IP address Select this option if you know the static IP address of the remote VPN device at the other end of the tunnel, and then enter the IP address.

IP by DNS Resolved Select this option if you do not know the static IP address of the remote VPN device but you do know its domain name. Then enter the remote VPN device's domain name on the Internet. The Router will retrieve the IP address of the remote VPN device.

E-mail address Enter the e-mail address as an ID.

Dynamic IP + Domain Name(FQDN) Authentication

The Local Security Gateway will be a dynamic IP address, so you do not need to enter the IP address. When the Remote Security Gateway requests to create a tunnel with the Router, the Router will work as a responder.

The domain name must match the Local Gateway of the remote VPN device and can only be used for one tunnel connection.

Domain Name Enter the domain name for authentication. (Once used, you cannot use it again to create a new tunnel connection.)

Dynamic IP + E-mail Addr.(USER FQDN) Authentication

The Remote Security Gateway will be a dynamic IP address, so you do not need to enter the IP address. When the Remote Security Gateway requests to create a tunnel with the Router, the Router will work as a responder.

E-mail address Enter the e-mail address for authentication.

Remote Security Group Type

Select the Remote Security Group behind the Remote Gateway that can use this VPN tunnel. Select the type you want to use: **IP**, **Subnet**, or **IP Range**. Follow the instructions for the type you want to use.

NOTE: The Remote Security Group Type you select should match the Local Security Group Type selected on the VPN device at the other end of the tunnel.

After you have selected the Remote Security Group Type, the settings available on this screen may change, depending on which selection you have made.

IP

Only the computer with a specific IP address will be able to access the tunnel.

IP address Enter the appropriate IP address.

Subnet

The default is **Subnet**. All computers on the remote subnet will be able to access the tunnel.

IP address Enter the IP address.

Subnet Mask Enter the subnet mask. The default is **255.255.255.0**.

IP Range

Specify a range of IP addresses within a subnet that will be able to access the tunnel.

IP range Enter the range of IP addresses.

IPSec Setup

In order for any encryption to occur, the two ends of a VPN tunnel must agree on the methods of encryption, decryption, and authentication. This is done by sharing a key to the encryption code. For key management, the default mode is **IKE with Preshared Key**.

Keying Mode Select **IKE with Preshared Key** or **Manual**. Both ends of a VPN tunnel must use the same mode of key management. After you have selected the mode, the settings available on this screen may change, depending on the selection you have made. Follow the instructions for the mode you want to use.

IKE with Preshared Key

IKE is an Internet Key Exchange protocol used to negotiate key material for Security Association (SA). IKE uses the Preshared Key to authenticate the remote IKE peer.

Phase 1 DH Group Phase 1 is used to create the SA. DH (Diffie-Hellman) is a key exchange protocol used during Phase 1 of the authentication process to establish pre-shared keys. There are three groups of different prime key lengths. Group 1 is 768 bits, and Group 2 is 1,024 bits. Group 5 is 1,536 bits. If network speed is preferred, select **Group 1**. If network security is preferred, select **Group 5**.

Phase 1 Encryption Select a method of encryption: **DES** (56-bit), **3DES** (168-bit), **AES-128** (128-bit), **AES-192** (192-bit), or **AES-256** (256-bit). The method determines the length of the key used to encrypt or decrypt ESP packets. AES-256 is recommended because it is the most secure. Make sure both ends of the VPN tunnel use the same encryption method.

Phase 1 Authentication Select a method of authentication, **MD5** or **SHA**. The authentication method determines how the ESP packets are validated. MD5 is a one-way hashing algorithm that produces a 128-bit digest. SHA is a one-way hashing algorithm that produces a 160-bit digest. SHA is recommended because it is more secure. Make sure both ends of the VPN tunnel use the same authentication method.

Phase 1 SA Life Time Configure the length of time a VPN tunnel is active in Phase 1. The default value is **28800** seconds.

Perfect Forward Secrecy If the Perfect Forward Secrecy (PFS) feature is enabled, IKE Phase 2 negotiation will generate new key material for IP traffic encryption and authentication, so hackers using brute force to break encryption keys will not be able to obtain future IPSec keys.

Phase 2 DH Group If the Perfect Forward Secrecy feature is disabled, then no new keys will be generated, so you do not need to set the Phase 2 DH Group (the key for Phase 2 will match the key in Phase 1).

There are three groups of different prime key lengths. Group 1 is 768 bits, and Group 2 is 1,024 bits. Group 5 is 1,536 bits. If network speed is preferred, select **Group 1**. If network security is preferred, select **Group 5**. You do not have to use the same DH Group that you used for Phase 1.

Phase 2 Encryption Phase 2 is used to create one or more IPSec SAs, which are then used to key IPSec sessions. Select a method of encryption: **NULL**, **ES** (56-bit), **3DES** (168-bit), **AES-128** (128-bit), **AES-192** (192-bit), or **AES-256** (256-bit). It determines the length of the key used to encrypt or decrypt ESP packets. AES-256 is recommended because it is the most secure. Both ends of the VPN tunnel must use the same Phase 2 Encryption setting.

Phase 2 Authentication Select a method of authentication, **NULL**, **MD5**, or **SHA**. The authentication method determines how the ESP packets are validated. MD5 is a one-way hashing algorithm that produces a 128-bit digest. SHA is a one-way hashing algorithm that produces a 160-bit digest. SHA is recommended because it is more secure. Both ends of the VPN tunnel must use the same Phase 2 Authentication setting.

Phase 2 SA Life Time Configure the length of time a VPN tunnel is active in Phase 2. The default is **3600** seconds.

Preshared Key This specifies the pre-shared key used to authenticate the remote IKE peer. Enter a key of keyboard and hexadecimal characters, e.g., My_@123 or 4d795f40313233. This field allows a maximum of 30 characters and/or hexadecimal values. Both ends of the VPN tunnel must use the same Preshared Key. It is strongly recommended that you change the Preshared Key periodically to maximize VPN security.

Manual

If you select Manual, you generate the key yourself, and no key negotiation is needed. Manual key management is used in small static environments or for troubleshooting purposes.

Manual

Incoming and Outgoing SPI (Security Parameter Index) SPI is carried in the ESP (Encapsulating Security Payload Protocol) header and enables the receiver and sender to select the SA, under which a packet should be processed. Hexadecimal values is acceptable, and the valid range is 100~ffffffff. Each tunnel must have a unique Incoming SPI and Outgoing SPI. No two tunnels share the same SPI. The Incoming SPI here must match the Outgoing SPI value at the other end of the tunnel, and vice versa.

Encryption Select a method of encryption, **DES** or **3DES**. This determines the length of the key used to encrypt or decrypt ESP packets. DES is 56-bit encryption and 3DES is 168-bit encryption. 3DES is recommended because it is more secure. Make sure both ends of the VPN tunnel use the same encryption method.

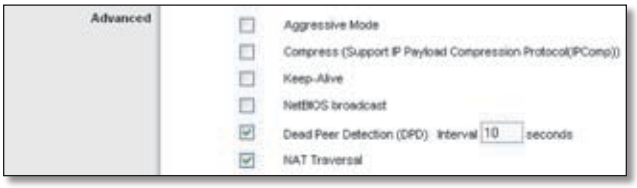
Authentication Select a method of authentication, **MD5** or **SHA1**. The Authentication method determines how the ESP packets are validated. MD5 is a one-way hashing algorithm that produces a 128-bit digest. SHA is a one-way hashing algorithm that produces a 160-bit digest. SHA1 is recommended because it is more secure. Make sure both ends of the VPN tunnel use the same authentication method.

Encryption Key This field specifies a key used to encrypt and decrypt IP traffic. Enter a key of hexadecimal values. If DES is selected, the Encryption Key is 16-bit, which requires 16 hexadecimal values. If you do not enter enough hexadecimal values, then the rest of the Encryption Key will be automatically completed with zeroes, so the Encryption Key will be 16-bit. If 3DES is selected, the Encryption Key is 48-bit, which requires 40 hexadecimal values. If you do not enter enough hexadecimal values, then the rest of the Encryption Key will be automatically completed with zeroes, so the Encryption Key will be 48-bit. Make sure both ends of the VPN tunnel use the same Encryption Key.

Authentication Key This field specifies a key used to authenticate IP traffic. Enter a key of hexadecimal values. If MD5 is selected, the Authentication Key is 32-bit, which requires 32 hexadecimal values. If you do not enter enough hexadecimal values, then the rest of the Authentication Key will be automatically completed with zeroes until it has 32 hexadecimal values. If SHA is selected, the Authentication Key is 40-bit, which requires 40 hexadecimal values. If you do not enter enough hexadecimal values, then the rest of the Authentication Key will be automatically completed with zeroes until it has 40 hexadecimal values. Make sure both ends of the VPN tunnel use the same Authentication Key.

Advanced

For most users, the settings on the VPN page should suffice; however, the Router provides advanced IPSec settings for advanced users using the IKE with Preshared Key mode. Click **Advanced** to view the Advanced settings.



Advanced

Aggressive Mode There are two types of Phase 1 exchanges, Main Mode and Aggressive Mode.

Aggressive Mode requires half of the main mode messages to be exchanged in Phase 1 of the SA exchange. If network security is preferred, leave the Aggressive Mode check box unchecked (Main Mode will be used). If network speed is preferred, select **Aggressive Mode**. If you select one of the Dynamic IP types for the Remote Security Gateway Type setting, then Main Mode will be unavailable, so Aggressive Mode will be used.

Compress (Support IP Payload Compression Protocol (IP Comp)) IP Payload Compression is a protocol that reduces the size of IP datagrams. Select this option if you want the Router to propose compression when it initiates a connection. If the responders reject this proposal, then the Router will not implement compression. When the Router works as a responder, it will always accept compression, even if compression is not enabled.

Keep-Alive Keep-Alive helps maintain IPSec VPN tunnel connections. If a connection is dropped and detected, it will be re-established immediately. Select this option to use this feature.

NetBIOS Broadcast Select this option to allow NetBIOS traffic to pass through the VPN tunnel. By default, the Router blocks this traffic.

NAT Traversal This is enabled by default. Both the IPSec initiator and responder must support the mechanism for detecting the NAT router in the path and changing to a new port, as defined in RFC 3947.

Dead Peer Detection (DPD) When DPD is enabled, the Router will send periodic HELLO/ACK messages to check the status of the VPN tunnel (this feature can be used only when both peers or VPN devices of the VPN tunnel use the DPD mechanism). Once a dead peer has been detected,

the Router will disconnect the tunnel so the connection can be re-established. Specify the interval between HELLO/ACK messages (how often you want the messages to be sent). DPD is enabled by default, and the default interval is **10** seconds.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

IPSec VPN > VPN Pass Through

The *VPN Pass Through* screen allows you to enable or disable passthrough for a variety of VPN methods.

IPSec VPN > VPN Pass Through

VPN Pass Through

IPSec Pass Through Internet Protocol Security (IPSec) is a suite of protocols used to implement secure exchange of packets at the IP layer. IPSec Pass Through is enabled by default to allow IPSec tunnels to pass through the Router.

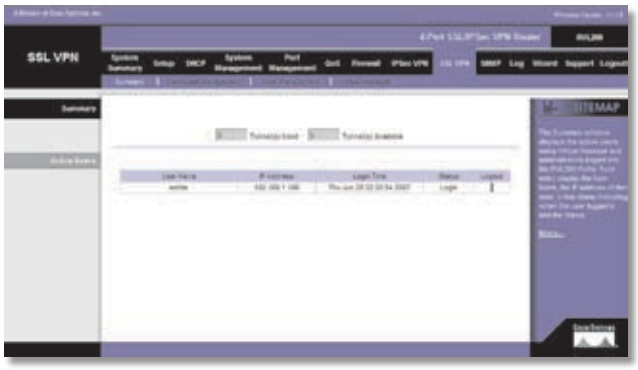
PPTP Pass Through Point-to-Point Tunneling Protocol (PPTP) allows the Point-to-Point Protocol (PPP) to be tunneled through an IP network. PPTP Pass Through is enabled by default.

L2TP Pass Through Layer 2 Tunneling Protocol is the method used to enable Point-to-Point sessions via the Internet on the Layer 2 level. L2TP Pass Through is enabled by default.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

SSL VPN > Summary

This screen displays general information about the SSL VPN tunnels. The Router supports up to five SSL VPN tunnels.



SSL VPN > Summary

Summary

Tunnel Used The number of VPN tunnels being used is displayed.

Tunnel Available The number of available VPN tunnels is displayed.

Active Users

This section displays the active users using Virtual Passage and administrative users logged into the SSL VPN Portal.

User Name This is the name of the user.

IP Address This is the IP address of the user.

Login Time This is the time stamp indicating when the user logged in.

Status Displayed here is the user's status, "Login" or "Connected." The status line will also display "Login" for administrative users who logged in through the Portal and did not create an SSL tunnel by Virtual Passage.

Logout Any administrative user can click the **Trash Can** icon to terminate a user session and log the user out.

SSL VPN > Certificate Management

Manage the certificate used for securing communications between the Router and VPN clients.

SSL VPN > Certificate Management

Generate New Certificate Click this option to generate a new certificate. It will replace the Router's existing certificate.

Export Certificate for Administration The certificate for administration holds the private key and should be stored in a safe place as a backup. Select this option to store your administration certificate as a file. The default filename is **RVL200_MMDD_HHMM.pem**, which you can rename. Follow the on-screen instructions to select the location where you want to store your certificate. If you reset the Router to its factory defaults, then you can import the certificate and restore it on the Router.

Export Certificate for Client Select this option to store your client certificate as a file. The default filename is **RVL200_MMDD_HHMM_Client.pem**, which you can rename. Follow the on-screen instructions to select the location where you want to store your certificate.

Import Certificate Specify where your certificate (X.509 certificate in a .pem file) is located. (This is the file you previously saved using the Export Certificate for Administration option.) Click **Browse** and follow the on-screen instructions. After you have selected the file, click **Import**.

Existing Certificate The filename of the current certificate is displayed.

SSL VPN > User Management

Define users for your SSL VPN tunnels.

SSL VPN > User Management

User Management

Edit Group

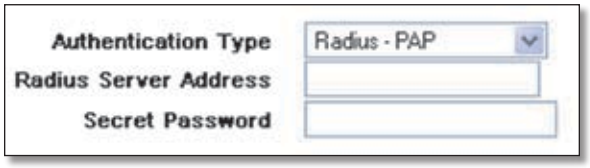
Authentication Type

Select the type you want to use: **Local User Database**, **RADIUS - PAP**, **RADIUS - CHAP**, **RADIUS - MSCHAP**, **RADIUS - MSCHAPV2**, **NT Domain**, **Active Directory**, or **LDAP**. Follow the instructions for the type you want to use.

Local User Database

Proceed to the "Edit User" section.

RADIUS - PAP, RADIUS - CHAP, RADIUS - MSCHAP, or RADIUS - MSCHAPV2



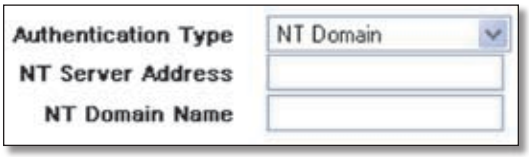
RADIUS - PAP

RADIUS Server Address Enter the IP address or domain name of the RADIUS server.

Secret Password If required by the RADIUS server, enter an authentication secret password.

Proceed to the "Edit User" section.

NT Domain



NT Domain

NT Server Address Enter the IP address or domain name of the server. (The Router does support Linux Samba Server Authentication.)

NT Domain Name Enter the NT authentication domain. This is the domain name configured on the Windows authentication server or Linux Samba authentication server for network authentication.

Proceed to the "Edit User" section.

Active Directory

Active Directory

Server Address Enter the IP address or domain name of the Active Directory server.

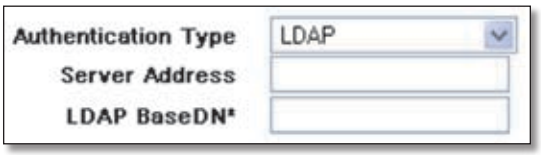
Active Directory Domain Enter the Active Directory domain name.

NOTE: If your users are unable to connect via Active Directory, verify the following:

1. The time settings between the Active Directory server and the Router must be synchronized. Kerberos authentication, used by Active Directory to authenticate clients, permits a maximum of a 15-minute time difference between the Windows server and client (the Router).
2. Make sure your Windows server is configured for Active Directory authentication. If you are using a Windows NT 4.0 server, then your server only supports NT Domain authentication. Windows 2000 and 2003 servers are also configured for NT Domain authentication to support legacy Windows clients.

Proceed to the "Edit User" section.

LDAP



LDAP

Server Address Enter the IP address or domain name of the server.

LDAP BaseDN* Enter the search base for LDAP queries. This is an example of a search base string: CN=Users,DC=yourdomain,DC=com. (Do not use quotation marks in this field.)

Proceed to the "Edit User" section.

Edit User

A list of users is displayed here.

User Name This is the name of the user.

User Type This is the type of user, User or Administrator.

Inactivity Timeout This is the number of idle minutes permitted before a session will time out.

Config Click **Edit** to change the user's settings on the *User Management* screen.

To add a new user, click **Add User**. (The maximum number of users is 128.) The *User Management* screen appears.

Add a User to the Local User Database

Configure the following settings:

User Name Enter the name the user will use to log into the SSL VPN Portal.

User Type For users with Local User Database authentication, select **User** or **Administrator**. User types can only access the SSL VPN Portal, and Administrator types can access the Router's web-based utility.

Password For users with Local User Database authentication, enter the user's password.

Confirm Password For users with Local User Database authentication, re-enter the user's password.

Inactivity Timeout Enter the number of idle minutes permitted before the session times out and the login screen appears. The default for User type is **0**, which disables the Inactivity Timeout feature. The default for Administrator type is **10** minutes.

Click **Save Settings** to save your changes, or click **Exit** to return to the *User Management* screen.

On the *User Management* screen, click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

SSL VPN > Virtual Passage

Define the IP address range for incoming Virtual Passage clients and establish an SSL VPN tunnel by Virtual Passage. Virtual Passage is a software application that enables remote users to securely connect to a remote network, as if they were on the local network.

SSL VPN > Virtual Passage

Virtual Passage

Client Address Range

Define the range of IP addresses to assign to incoming Virtual Passage clients. The default is **192.168.1.200** to **192.168.1.210**. The Router can support up to five concurrent active users.

Range Start Enter the starting IP address of the IP address range.

Range End Enter the ending IP address of the IP address range.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

SSL VPN Portal

Click **Access Portal** to connect to the SSL VPN Portal screen. Then you will be able to establish an SSL VPN tunnel by Virtual Passage. (For instructions on how to install and use the Virtual Passage Client, refer to "Appendix B: Virtual Passage SSL VPN Client.")

SSL VPN Portal

SNMP > Global Parameters

Configure the parameters to define the SNMP Engine ID and notification.

SNMP > Global Parameters

Global Parameters

Enable SNMP To use SNMP, select this option.

SNMPv3

Local Engine ID If you want to manually generate the local engine ID, enter the values in text form and then click **Save Settings**. The Router will automatically generate an engine ID in hexadecimal characters.

Use Default If you want the Router to generate engine IDs based on the device MAC address, select this option. The engine IDs are based on the following:

First Four Octets

- First bit = 1
- Rest of the bits = IANA Enterprise number (To locate the IANA Enterprise number, use the show SNMP command via a command line interface.)

Fifth Octet

Set to 4 to indicate that the engine ID format is text.

Last Twelve Octets

These are the hexadecimal characters of the device MAC address.

Notifications

SNMP Notifications If you want the Router to send SNMP notifications, select this option.

Authentication Failure Notifications If you want the Router to send authentication failure notifications, select this option.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

SNMP > Views

Configure this screen to allow or deny access to SNMP features.

SNMP > Views

Views

View Table

View Name Select the appropriate view name. There are two default views:

Default

This displays the default SNMP views for read and read/write views, including the following MIB OIDs:

- 1 included
- 1.3.6.1.6.3.13 excluded
- 1.3.6.1.6.3.16 excluded
- 1.3.6.1.6.3.18 excluded
- 1.3.6.1.6.3.12.1.2 excluded
- 1.3.6.1.6.3.12.1.3 excluded
- 1.3.6.1.6.3.15.1.2 excluded
- 1.3.6.1.4.1.3955.2.1.13 excluded (Linksys MIB community table)
- 1.3.6.1.4.1.3955.2.2.8 excluded (disable/enable SNMP, advanced management SNMP status)
- 1.3.6.1.4.1.3955.2.2.16 excluded (trap manager table)

DefaultSuper

This displays the default SNMP view for administrator views. It does not block any subtree OID.

New View Name Enter a new view name.

SubTree ID Tree Linksys supports user-defined OIDs. These are some of the common MIB OIDs:

- **IP-MB** 1.3.1.2.1.48
- **IF-MIB** 1.3.6.1.2.1.31
- **TCP-MIB** 1.3.6.1.2.1.49
- **UDP-MIB** 1.3.6.1.2.1.50
- **SNMPv2-MIB** 1.3.6.1.6.3.1
- **RCF1213-MIB** 1.3.6.1.2.1.1
- **SNMP-VIEW-BASED-ACM-MIB** 1.3.6.1.6.3.16
- **SNMP-COMMUNITY-MIB** 1.3.6.1.6.3.18
- **SNMP-FRAMEWORK-MIB** 1.3.6.1.6.3.10
- **SNMP-MPD-MIB** 1.3.6.1.6.3.11
- **SNMP-USER-BASED-SM-MIB** 1.3.6.1.6.3.15
- **SNMP-TARGET-MIB** 1.3.1.6.3.12
- **LINKSYS-MIB** 1.3.6.1.4.1.3955

View Type Select **included** if the defined OID will be included in the selected SNMP view. Select **excluded** if the defined OID will be excluded.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of 20. To delete an entry, select it and click **Delete**.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

SNMP > Group Profile

Define the SNMP groups and their features, including SNMP version usage and access rights.

SNMP > Group Profile

Group Profile

Group Table

Group Name Enter a name for the group, up to 30 characters.

Security Model Select the version of SNMP the group uses: **SNMPv1**, **SNMPv2**, or **SNMPv3**.

Security Level This option is available if SNMPv3 is selected for the Security Model. Select **No Authentication** if no authentication or privacy security levels are specified. Select **Authentication** if SNMP message origins are authenticated. Select **Privacy** SNMP messages are authenticated and encrypted.

Operation Select **Read** if you want the group to have read-only access to the assigned SNMP view; the group cannot change the assigned SNMP view. Then select the appropriate SNMP view.

Select **Write** if you want the group to have read/write access to the assigned SNMP view; the group can change the assigned SNMP view. Then select the appropriate SNMP view.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of 15. To delete an entry, select it and click **Delete**.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

SNMP > Group Membership

Assign users to specific SNMP groups.

SNMP > Group Membership

Group Membership

Membership Table

User Name Enter a name for the user.

Engine ID Select **Local** if the user is connected to a local SNMP entity.

Select **Remote** if the user is connect to a remote SNMP entity. Then enter the remote engine ID.

Group Name Select a group for the user.

Authentication Method Select the appropriate method: **MD5 Password**, **SHA1 Password**, **MD5 Key**, or **SHA1 Key**.

Password If MD5 or SHA1 Password is selected, then only the password will be used for authentication. Enter the password. Its length must be equal to or larger than 8 bytes.

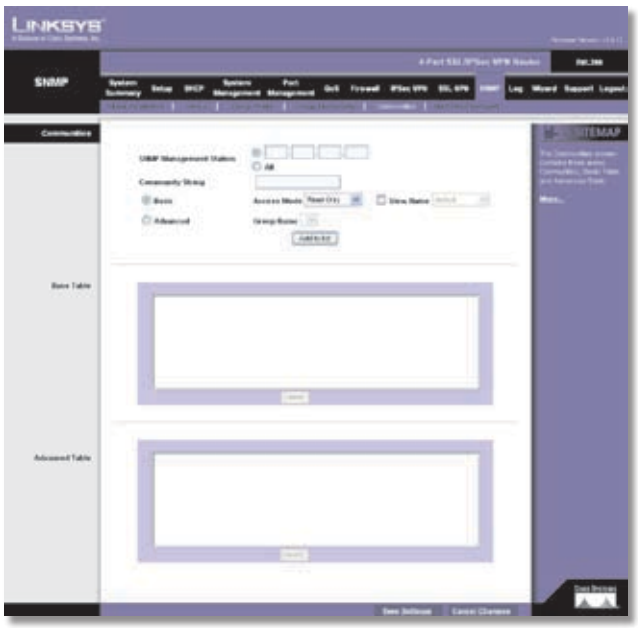
Key If MD5 or SHA1 Key is selected, then the authentication key and privacy key will be used for authentication. Enter the authentication key and privacy key. The length of the MD5 authentication key must be 16 bytes. The length of the SHA authentication key must be 20 bytes. The length of the privacy key must be 8 bytes.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of 30. To delete an entry, select it and click **Delete**.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

SNMP > Communities

Define the SNMPv1/v2c users.



SNMP > Communities

Communities

SNMP Management Station Select the top option to specify an IP address. Then enter the IP address of this community name.

Select **All** to specify all IP addresses for all management stations.

Community String Enter the password used to authenticate the management station to the Router.

Select how you want to define the access control of this community.

Basic

Access Mode This allows both v1 and v2c operation requests. Select **Read Only** if you want the user to have read-only access to the parameters of the MIB tree with respect to the view name.

Select **Read Write** if you want the user to have read/write access to the parameters of the MIB tree with respect to the view name.

Select **SNMP Admin** if you want the user to have full access to parameters of the MIB tree.

View Name Select **View Name** and then select the appropriate MIB OID. If View Name is not selected, the option, **default**, will be assigned.

Advanced

Group Name Select a group, either v1 or v2c, to assign to this community.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of 15.

Base Table

The basic entries are listed. To delete an entry, select it and click **Delete**.

Advanced Table

The advanced entries are listed. To delete an entry, select it and click **Delete**.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

SNMP > Notification Recipient

Define the types and frequencies of the notifications.

SNMP > Notification Recipient

Notification Recipient

Recipient IP Enter the IP address that will receive the SNMP traps.

Notification Type Select the appropriate type, **Trap** or **Inform**. An Inform type requires response, while a Trap type does not.

UDP Port Enter the destination port number. The default is **162**.

Timeout If you selected Inform as the Notification Type, then enter the number of seconds the Router waits before re-sending an inform request. The default is **15** seconds.

Retries If you selected Inform as the Notification Type, then enter the number of tries you want the Router to re-send an inform request. The default is **3**.

SNMPv1,2

Select this option if you want to use a v1 or v2 trap. If you selected Inform as the Notification type, this option will not be available (v1 does not use inform requests).

Then configure the following:

Community String Enter the password used to authenticate the management station to the Router.

Notification Version Select the appropriate version, **SNMPv1** or **SNMPv2**.

SNMPv3

Select this option if you want to use SNMPv3. Then configure the following:

User Name Enter the name of the user who receives SNMP notifications.

Security Level Select **No Authentication** if no authentication or privacy security levels are specified. Select **Authentication** if SNMP message origins are authenticated. Select **Privacy** SNMP messages are authenticated and encrypted.

Click **Add to List**, and configure as many entries as you would like, up to a maximum of 10.

SNMPv1,2 Table

The SNMPv1,2 entries are listed. To delete an entry, select it and click **Delete**.

SNMPv3 Table

The SNMPv3 entries are listed. To delete an entry, select it and click **Delete**.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Log > System Log

Configure the Router's log settings, so you can specify how you want its activity logs handled.

Log > System Log

System Log

Syslog

Syslog is a standard protocol used to capture information about network activity. The Router supports this protocol and can send its activity logs to an external server.

Enable Syslog Select this option to enable the Router's Syslog feature.

Syslog Server In addition to the standard event log, the Router can send a detailed log to an external Syslog server. The Router's Syslog captures all log activities and includes this information about all data transmissions: every connection source and destination IP address, IP service, and number of bytes transferred. Enter the Syslog server name or IP address. Click **Save Settings** to save your changes, and then restart the Router for the changes to take effect.

E-mail

You may want logs or alert messages to be e-mailed to you. If so, then configure the E-mail settings.

Enable E-Mail Alert Select this option to enable the Router's E-Mail Alert feature.

Mail Server If you want any log or alert information e-mailed to you, then enter the name or numerical IP address of your SMTP server. Your ISP can provide you with this information.

Send E-mail to Enter the e-mail address that will receive your log files. If you do not want copies of the log information e-mailed to you, then leave this field blank.

Enable E-Mail Authentication Select this option to enable the Router's E-Mail Authentication feature.

User Name Enter the user name for authentication.

Password Enter the password for authentication.

Log Queue Length You can designate the length of the log that will be e-mailed to you. The default is **50** entries, so unless you change this setting, the Router will e-mail the log to you when there are more than 50 log entries.

Log Time Threshold You can designate how often the log will be e-mailed to you. The default is **10** minutes, so unless you change this setting, the Router will e-mail the log to you every 10 minutes.

The Router will e-mail the log every time the Log Queue Length or Log Time Threshold is reached.

E-mail Log Sorting Logs have different severity levels. The higher the severity level, the more critical the log is (the highest level is Severity0_Emergency). Select the minimum severity level of logs that are e-mailed. Log events with equal or higher severity level will also be

e-mailed at the same time. The default is **Severity0_ Emergency**.

Click **E-mail Log Now** to immediately send the log to the address in the *Send E-mail to* field.

Log Setting

Alert Log

Syn Flooding Select this option if you want Syn Flooding events to trigger an alert.

IP Spoofing Select this option if you want IP Spoofing events to trigger an alert.

Win Nuke Select this option if you want Win Nuke events to trigger an alert.

Ping of Death Select this option if you want Ping of Death events to trigger an alert.

Unauthorized Login Attempt If this option is enabled, Unauthorized Login Attempt events trigger an alert. This option is enabled by default.

General Log

Deny Policies Select this option if you do not want to include log events from Deny rules on the *Firewall > Access Rule* screen. Log events from Deny rules will be logged separately from Deny Policies if the option, log packets match this rule, is selected.

Allow Policies Select this option if you want to include log events from Allow rules on the *Firewall > Access Rule* screen. Log events from Allow rules will be logged whether or not the option, log packets match this rule, is selected.

Authorized Login If this option is enabled, Authorized Login events are included. This option is enabled by default.

View System Log To view logs, click this option. The *System Log* screen appears.

System Log

Current Time The time of the Router is displayed.

Select the log you wish to view: **ALL**, **System Log**, **Firewall Log**, **IPSec Log**, or **SSL Log**. The All log displays a log of all activities. The System Log displays a list of cold and warm starts, web login successes and failures, and packet filtering policies. The Firewall Log displays all activities regarding the Router's firewall. The IPSec Log shows information about IPSec VPN tunnel activity. The SSL Log shows information about SSL VPN tunnel activity.

Select the severity level of log events you wish to view.

Time The time of each log event is displayed. You can sort each log by time sequence.

Event-Type The type of log event is displayed.

Message The message associated with each log event is displayed.

To update a log, click **Refresh**. To clear a log, click **Clear**. To exit the *System Log* screen and return to the *Log > System Log* screen, click **Close**.

Outgoing Log Table To view the outgoing packet information including LAN IP, Destination URL/IP and Service/Port number, click this option.

Outgoing Log Table

To update the on-screen, click **Refresh**. To exit the *Outgoing Log Table* screen and return to the *Log > System Log* screen, click **Close**.

Incoming Log Table To view the incoming packet information including Source IP and Destination Port number, click this option.

Incoming Log Table

To update the on-screen, click **Refresh**. To exit the *Incoming Log Table* screen and return to the *Log > System Log* screen, click **Close**.

Clear Log Now To clear your log without e-mailing it, click this option. Only use this option if you are willing to lose your log information.

Click **Save Settings** to save your changes, or click **Cancel Changes** to undo them.

Log > System Statistics

This screen displays statistics about all of the Router's ports (LAN and WAN ports). For each port, the following statistics are listed: Device Name, Status, IP Address, MAC Address, Subnet Mask, Default Gateway, DNS, number of Received Packets, number of Sent Packets, number of Total Packets, number of Received Bytes, number of Sent Bytes, number of Total Bytes, number of Error Packets Received, and number of Dropped Packets Received.

Log > System Statistics

Click **Refresh** to update the statistics.

Wizard

Use this tab to access two Setup Wizards, the Basic Setup Wizard and the Access Rule Setup Wizard. Run the Basic Setup Wizard to set up the Router for your Internet connection(s). Run the Access Rule Setup Wizard to set up the security policy for the Router.

Wizard

Basic Setup

1. Click **Launch Now** to run the Basic Setup Wizard.
2. Your Internet Service Provider (ISP) may require you to use a host and domain name for your Internet connection. If your ISP requires them, complete the *Host Name* and *Domain Name* fields; otherwise leave these blank. Click **Next** to continue. Click **Exit** if you want to exit the Setup Wizard.

Host and Domain Name

3. Select the WAN (or Internet) Connection Type for the WAN port. Select the appropriate connection type: **Obtain an IP automatically**, **Static IP**, or **PPPoE**. Click **Next** to continue. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

WAN Connection Type

4. Depending on which connection type you have selected, the appropriate screen will appear. Follow the instructions for the appropriate connection type:

Obtain an IP automatically

If you want to use the ISP's DNS server, select Use DNS Server provided by ISP (default). If you want to designate a specific DNS server IP address, select Use the Following DNS Server Addresses, and enter the DNS server IP addresses you want to use (you must enter at least one).

Click **Next** to continue, and proceed to step 5. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

Obtain an IP Automatically

Static IP

Complete the *Static IP*, *Subnet Mask*, and *Default Gateway* fields with the settings provided by your ISP. Click **Next** to continue.

Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

Static IP

On the *DNS Servers* screen, enter the DNS server IP addresses you want to use (you must enter at least one).

Click **Next** to continue, and proceed to step 5. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

DNS Servers

PPPoE

Complete the *User Name* and *Password* fields with the information provided by your ISP.

Click **Next** to continue. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

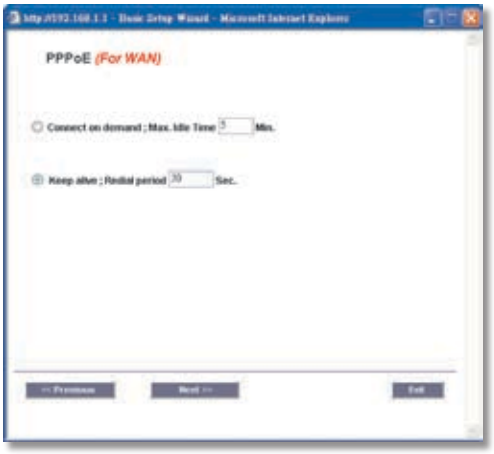
PPPoE

Select **Connect on demand** or **Keep alive**. If you select the Connect on demand option, the connection will be disconnected after a specified period of inactivity (Max Idle Time). If you have been disconnected due to inactivity, Connect on Demand enables the Router to automatically re-establish your connection as soon as you attempt to access the Internet again. Enter the number of minutes you want to have elapsed before

your Internet access disconnects. The default is **5** minutes.

If you select the Keep alive option, the Router will keep the connection alive by sending out a few data packets periodically, so your ISP thinks that the connection is still active. This option keeps your connection active indefinitely, even when it sits idle. The default Redial Period is **30** seconds.

Click **Next** to continue, and proceed to step 5. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.



Connect on Demand or Keep Alive

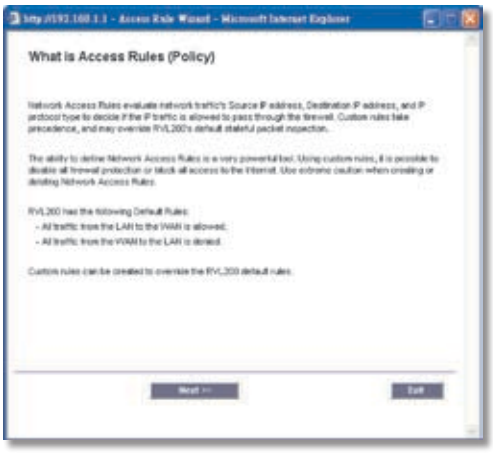
5. If you want to save your changes, click **Save Settings**. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

Save Settings

Access Rule Setup

1. Click **Launch Now** to run the Access Rule Setup Wizard.

2. This screen explains the Access Rules, including the Router's Default Rules. Click **Next** to continue. Click **Exit** if you want to exit the Setup Wizard.



Access Rules Policy

3. From the drop-down menu, select **Allow** or **Deny** depending on the intent of the Access Rule.

   Click **Next** to continue. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

Select the Action

4. Select the service you want from the *Service* pull-down menu.

   Click **Next** to continue. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

Select the Service

5. For this service, you can select whether or not you want the Router to keep a log tracking this type of activity. To keep a log, select **Log packets match this access rule**. If you do not want a log, select **Not log**.

   Click **Next** to continue. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

Select the Log

6. Select the appropriate Source Interface: **LAN**, **WAN**, or **Any** from the *Interface* pull-down menu.

   Select the Source IP address(es) for this Access Rule. If it can be any IP address, select **Any**. If it is one IP address, select **Single** and enter the IP address in the *Source IP* fields. If it is a range of IP addresses, select **Range**, and enter the IP addresses in the *Source IP* fields.

   Click **Next** to continue. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

Select the Source

7. Select the Destination IP address(es) for this Access Rule. If it can be any IP address, select **Any**. If it is one IP address, select **Single** and enter the IP address in the *Destination IP* fields. If it is a range of IP addresses, select **Range**, and enter the IP addresses in the *Destination IP* fields.

   Click **Next** to continue. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

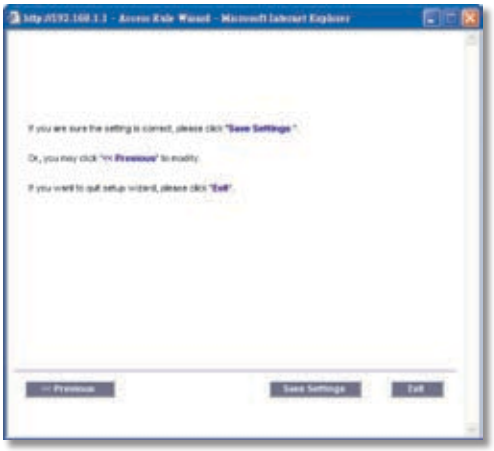
Select the Destination

8. Decide when you want this Access Rule to be enforced. Select **Always** if you want the Access Rule to be always enforced. Click **Next** to continue. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

When It Works

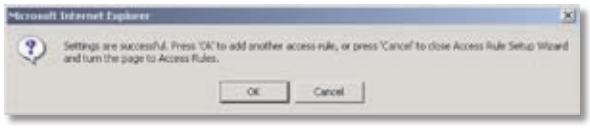
Select **Scheduling** if you want to specify when the Access Rule should be in effect. Click **Next** to continue. A new screen appears. Decide what times and which days of the week the Access Rule should be enforced. Then enter the hours and minutes in 24-hour format, and select the appropriate days of the week. Click **Next** to continue. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.

9. If you want to save your changes, click **Save Settings**. Click **Previous** if you want to return to the previous screen. Click **Exit** if you want to exit the Setup Wizard.



Save Settings

10. A screen appears to notify you that the settings have been saved. If you want to add another Access Rule, click **OK**, and the first screen of the Access Rule Setup Wizard will appear. If you want to exit the Access Rule Setup Wizard, click **Cancel**, and the *Firewall* > *Access Rules* screen will appear.



Settings are Successful

Support

Access a variety of resources on the Support page of the Linksys website, www.linksys.com. You must have an active Internet connection before you can visit the Linksys website.

Support

Manual

If you want the latest version of this User Guide, follow these instructions:

1. Click the **On Line Manual**.
2. The Support page of the Linksys website appears. Click the **Support** tab and then **Downloads**.
3. Select **RVL200 - 4-Port SSL/IPSec VPN Router** from the drop-down menu.
4. Click **Downloads for this Product**.
5. Click **User Guide**.

Linksys Web Site

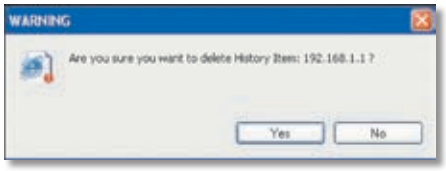
Click **Linksys Web Site**, and the Support page of the Linksys website appears.

Logout

The Logout tab is located on the upper right-hand corner of the screen. Click this tab to end the management

session. (If you end the session, you will need to re-enter your User Name and Password to log in and then manage the Router.)

After you click the Logout tab, a *Warning* screen appears. It will ask you to confirm that you want to delete the History Item for the Router. (The Web Cache Cleaner will prompt you to delete all temporary Internet files, cookies, and browser history during logout.) Click **Yes**.



Logout

Appendix A: Troubleshooting

The firmware upgrade has failed.

A firmware upgrade takes approximately ten minutes. An error may occur if you powered off the Router, pressed the Reset button, closed the *System Management* > *Firmware Upgrade* screen, or disconnected the computer from the Router during the firmware upgrade.

If the firmware upgrade failed, repeat the firmware upgrade procedure using the *System Management* > *Firmware Upgrade* screen of the web-based utility. Refer to "Appendix O: Firmware Upgrade" for details.

If the Diag LED continues to flash, the firmware image is damaged. Use the TFTP utility to upgrade the firmware. You can download the TFTP utility at www.linksys.com.

Your computer cannot connect to the Internet.

Follow these instructions until your computer can connect to the Internet:

- Make sure that the Router is powered on. The Power LED should be green and not flashing.
- If the Power LED is flashing, then power off all of your network devices, including the modem, Router, and computers. Then power on each device in the following order:
  1. Cable or DSL modem
  2. Router
  3. Computer
- Check the cable connections. The computer should be connected to one of the ports numbered 1-4 on the Router, and the modem must be connected to the Internet port on the Router.

The DSL telephone line does not fit into the Router's Internet port.

The Router does not replace your modem. You still need your DSL modem in order to use the Router. Connect the telephone line to the DSL modem, insert the setup CD into your computer, and then follow the on-screen instructions.

The Router does not have a coaxial port for the cable connection.

The Router does not replace your modem. You still need your cable modem in order to use the Router. Connect your cable connection to the cable modem, insert the setup CD into your computer, and then follow the on-screen instructions.

WEB: If your questions are not addressed here, refer to the Linksys website, **www.linksys.com**.

Appendix B: Virtual Passage SSL VPN Client

Overview

The Router's SSL VPN Portal includes an ActiveX-based VPN client that provides full network connectivity for Windows users. This client, called the Virtual Passage Client, lets you remotely access the Router's network through a secure connection.

This chapter discusses the Virtual Passage Client for Windows, Mac, and Linux Operating System (OS) users.

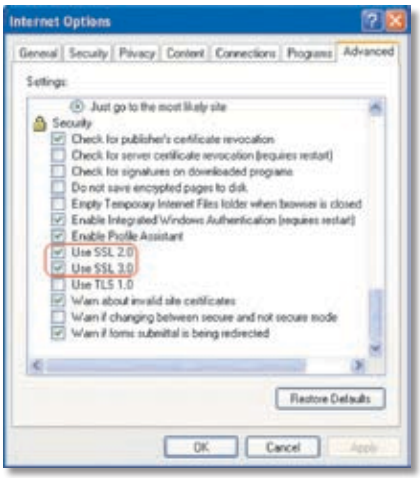
Before You Begin (Windows OS)

The Router's web-based utility and SSL VPN Portal support Internet Explorer 6.0 (or higher) and Netscape Communicator 8.0 (or higher) running in a Windows environment.

To configure the SSL VPN software, your web browser must have SSL, JavaScript, ActiveX, and cookies enabled (these settings are enabled by default). If the settings are already enabled, proceed to the next section, "Make the SSL VPN Portal a Trusted Site". If the settings are disabled, you should enable them before configuring the Router. Proceed to the instructions for your web browser.

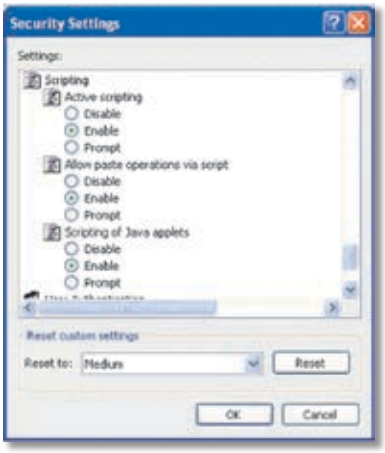
Internet Explorer 6.0 or Higher

1. Open **Internet Explorer**.
2. Click **Tools**.
3. Click **Internet Options**.
4. Click the **Advanced** tab.
5. Select **Use SSL 2.0** and **Use SSL 3.0**.



Internet Explorer > Internet Options > Advanced

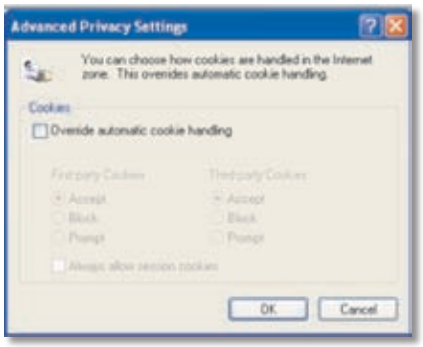
6. Click **OK**.
7. Click the **Security** tab.
8. Click **Custom Level**.
9. Select **Enable** for the *Active scripting*, *Allow paste operations via script*, and *Scripting of Java applets* settings.



Internet Explorer > Internet Options > Security

10. Click **OK**.
11. Click the **Privacy** tab.
12. Click **Advanced**.

13. Deselect (remove the checkmark from) **Override automatic cookie handling**.

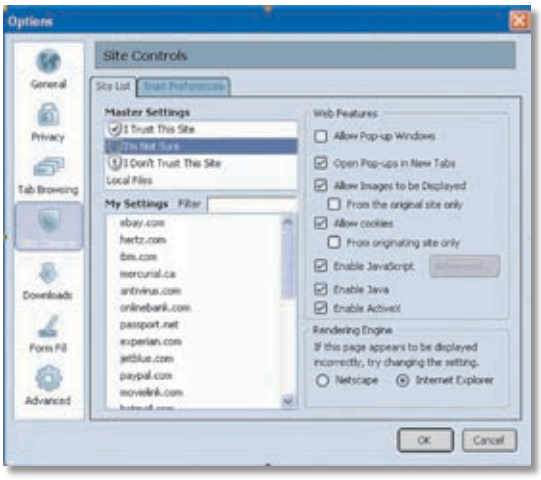

Advanced Privacy Settings
You can choose how cookies are handled in the Internet zone. This overrides automatic cookie handling.
Cookies
Override automatic cookie handling
OK
Cancel

Internet Explorer > Internet Options > Privacy

14. Click **OK**.
15. Click **OK** again.

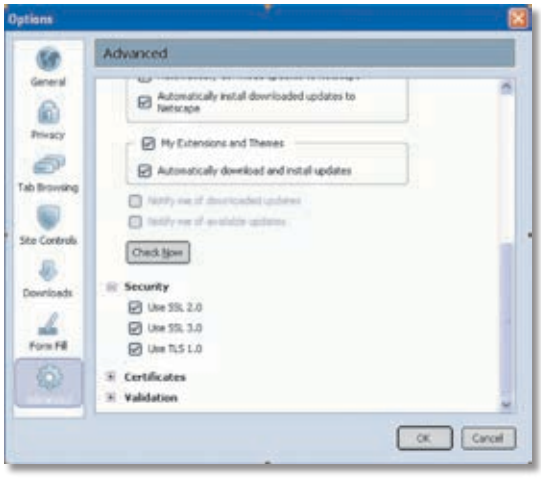
Netscape Communicator 8.0 or Higher

1. Open **Netscape Communicator**.
2. Click **Tools**.
3. Click **Options**.
4. Click **Site Controls**.
5. Click the **Trust Preferences** tab.
6. In the Master Settings section, click **I'm Not Sure**.
7. Click **Allow cookies**.
8. Click **Enable JavaScript**.
9. Click **Advanced**.
10. Click **Enable ActiveX**.



Netscape Communicator > Options > Site Controls > Web Features

11. Click **OK**.
12. Under Options, click **Advanced**.
13. Click **Security**.
14. Select **Use SSL 2.0** and **Use SSL 3.0**.



Netscape Communicator > Options > Advanced > Security

15. Click **OK**.

Make the SSL VPN Portal a Trusted Site (Windows OS)

Most web browsers support multiple security zones with different permission levels. Trusted sites have a lower security setting that will allow the Java and ActiveX content to work properly. If your web browser's security settings are set to High, you may need to add the SSL VPN Portal to your browser's list of trusted sites.

The following instructions are provided for Internet Explorer. For Netscape Communicator, refer to its Help section for details.

1. Open **Internet Explorer**.
2. Go to the SSL VPN Portal as a trusted site.
3. Press **Alt + D** to select the SSL VPN Portal address, and press **Ctrl + C** to copy it to the Windows Clipboard.
4. Click **Tools**.
5. Click **Internet Options**.
6. Click the **Security** tab.
7. Click **Trusted sites**.
8. Click the **Sites** button.
9. The *Trusted sites* screen appears. In the *Add this Web site to the zone* field, press **Ctrl + V** to paste in the SSL VPN Portal web address.
10. Click **Add**.
11. Click **OK**.
12. Click **OK** again.

Login for the SSL VPN Portal (Windows OS)

Follow these instructions to log in:

1. Enter the IP address of the Router, **https://<WAN IP address of the Router>**, in your web browser. Then press the **Enter** key.
2. A login screen appears. Enter your user name in the *User Name* field, and enter your password in the *Password* field.
3. Click **Login**.

SSL VPN Portal Login Screen

If your user type is Administrator, then you can access the web-based utility. If your user type is User, then you can use Virtual Passage only.

Installation of the Virtual Passage Client (Windows OS)

The first time you create an SSL VPN tunnel, you have to install the Virtual Passage Client on your computer.

Before you begin, make sure you have administrative rights on your computer. Then follow these instructions:

1. Click the **Unlock** icon.

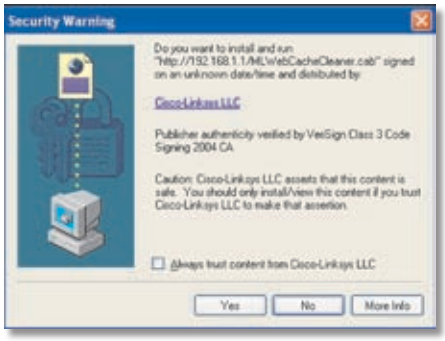
Click the Unlock Icon

2. After you have logged in, you will be asked to install the Web Cache Cleaner application. This will prompt any user of the Router to delete all temporary Internet files, cookies, and browser history when the user logs out or closes the web browser window. (The ActiveX web cache control will be ignored by web browsers that do not support ActiveX.)

   Click the link to install the Web Cache Cleaner.

Click to Install the Web Cache Cleaner

3. On the *Security Warning* screen, click **Yes**.



Click Yes to Install

4. A second *Security Warning* screen asks you if you want to install XTunnel, the Virtual Passage application.

   Click **Install**.

Click Install

5. The *Hardware Installation* screen asks you if you want to continue with the installation.

   Click **Continue Anyway**.

Click Continue Anyway

The Web Cache Cleaner and XTunnel are installed in C:\\WINDOWS\Downloaded Program Files.

Installation Complete

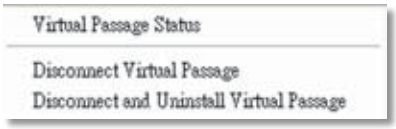
After the software is installed, you will be notified that the SSL VPN tunnel has been established.

SSL VPN Tunnel Established

An icon appears in the system tray of your computer.

System Tray Icon

When you right-click the icon, you have three options:



Virtual Passage Menu

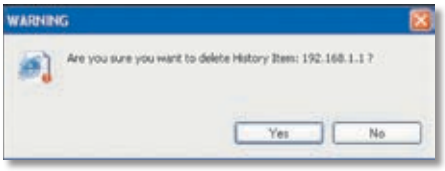
Virtual Passage Status Click **Virtual Passage Status** to display a status screen indicating the connection status, interfaces, activity, and status message. Click **Disconnect** to end your session, or click **Close** to exit this screen.

Disconnect Virtual Passage Click **Disconnect Virtual Passage** to end the session.

Disconnect and Uninstall Virtual Passage Click **Disconnect and Uninstall Virtual Passage** to end the session remove the Virtual Passage application from your computer.

Logout of the SSL VPN Portal (Windows OS)

When you log out, you will see a *Warning* screen. It will ask you to confirm that you want to delete the History Item for the Router. (The Web Cache Cleaner will prompt you to delete all temporary Internet files, cookies, and browser history during logout.) Click **Yes**.



Click Yes to Delete History

Windows Vista Usage

If you use Windows Vista to establish an SSL VPN connection and do not disable the User Account Control (UAC) feature, an error message will display, indicating that Virtual Passage was not installed.

Vista Error Message

To install Virtual Passage, follow these instructions:

1. Click **Start**.
2. Select **All Programs > Control Panel > User Accounts > Turn User Accounts On or Off**.
3. Deselect (remove the check mark from) **User Account Control (UAC) to help protect your computer**.

Deselect Use User Account Control (UAC)

4. Click **OK**.
5. Restart your computer.
6. Establish the SSL VPN connection again.

NOTE: After you end the SSL VPN connection, Linksys recommends that you enable the User Account Control (UAC) feature.

Login for the SSL VPN Portal (Mac OS X)

Follow these instructions to log in:

1. Enter the IP address of the Router, **https://<WAN IP address of the Router>**, in your web browser. Then press the **Enter** key.
2. A login screen appears. Enter your user name in the *User Name* field, and enter your password in the *Password* field.
3. Click **Login**.

SSL VPN Portal Login Screen

If your user type is Administrator, then you can access the web-based utility. If your user type is User, then you can use Virtual Passage only.

Installation of the Virtual Passage Client (Mac OS X)

The first time you create an SSL VPN tunnel, you have to install the Virtual Passage Client on your computer.

Before you begin, make sure you have administrative rights on your computer. Then follow these instructions:

1. Click the **Unlock** icon.

Click the Unlock Icon

2. A screen may appear indicating that the certificate cannot be verified. Linksys has confirmed that the certificate is valid.

   Click **Continue**.

Safari can't verify the identity of the website "10.0.0.3".
The certificate for this website was signed by an unknown certifying authority. You might be connecting to a website that is pretending to be "10.0.0.3" which could put your confidential information at risk. Would you like to connect to the website anyway?
Show Certificate
Cancel
Continue

Click to Continue

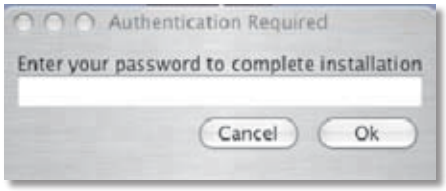
3. On the *Warning* screen, click **Run**.

Warning - Hostname Mismatch
The name of the site does not match the name on the certificate. Do you want to run the application?
Name: 10.0.0.3
Publisher: Linksys
Run
Cancel

Click Run

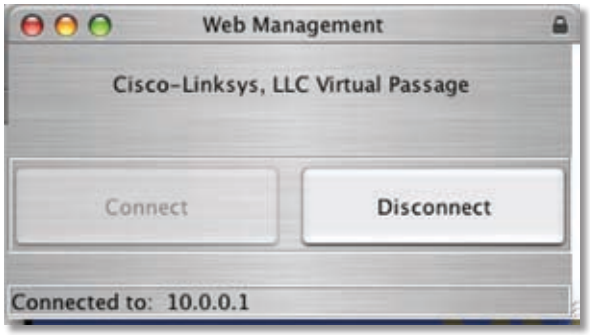
4. Enter your password for OS X.

   To install the Virtual Passage Client, click **OK**.



Enter Your Password

After the software is installed, you will be notified that the SSL VPN tunnel has been established.



SSL VPN Tunnel Established

To end the SSL VPN connection, click **Disconnect**.

NOTE: If you used Safari or Firefox to establish the SSL VPN connection through HTTP and want to switch to HTTPS to re-establish the SSL VPN connection, you must close your web browser before switching to HTTPS.

Removal of the Virtual Passage Client (Mac OS X)

To remove the Virtual Passage Client, follow these instructions:

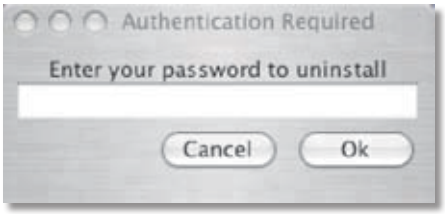
1. In the sentence, "Click here to Uninstall VPN Tunnel client", click the word **here**.

LINKSYS
SSLVPN
Please Click to Establish SSL VPN Tunnel...
Keep your browser open to maintain the connection.
Click here to Uninstall VPN Tunnel client.
Note : Uninstallation can be done only as "root".

Click the Word "Here"

2. Enter your password for OS X.

   To uninstall the Virtual Passage Client, click **OK**.



Enter Your Password

3. After the software is removed, you will be notified. Click **OK**.

Warning - Hostname Mismatch
The name of the site does not match the name on the certificate. Do you want to run the application?
Name: 10.0.0.3
Publisher: Linksys
Run
Cancel

Click OK

Before You Begin (Linux OS)

Make sure you have administrative rights on your computer. Then install the freeware, Java Runtime Environment (JRE), on your computer. To download the freeware, visit Java-related websites. If you do not install JRE, a warning message will appear, and you cannot install the Virtual Passage Client.

Default Plugin
This page contains information of a type (application/x-java-vm) that can only be viewed with the appropriate Plug-in.
OK

Warning Message

Login for the SSL VPN Portal (Linux OS)

Follow these instructions to log in:

1. Enter the IP address of the Router, **https://<WAN IP address of the Router>**, in your web browser. Then press the **Enter** key.
2. A login screen appears. Enter your user name in the *User Name* field, and enter your password in the *Password* field.
3. Click **Login**.

SSL VPN Portal Login Screen

If your user type is Administrator, then you can access the web-based utility. If your user type is User, then you can use Virtual Passage only.

Installation of the Virtual Passage Client (Linux OS)

The first time you create an SSL VPN tunnel, you have to install the Virtual Passage Client on your computer.

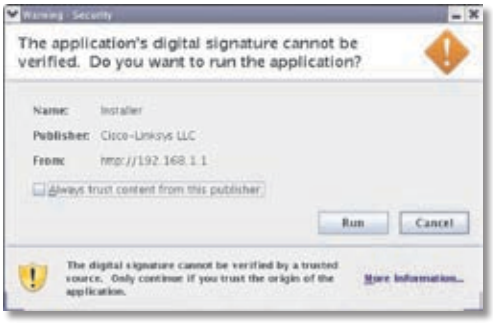
Before you begin, make sure you have administrative rights on your computer. Then follow these instructions:

1. Click the **Unlock** icon.

Click the Unlock Icon

2. A screen may appear indicating that the digital signature cannot be verified. Linksys has confirmed that the digital signature is valid.

   Click **Run**.


The application's digital signature cannot be verified. Do you want to run the application?
Name: Installer
Publisher: Cisco-Linksys LLC
From: http://192.168.1.1
Always trust content from this publisher
Run
Cancel
The digital signature cannot be verified by a trusted source. Only continue if you trust the origin of the application.
More Information...

Click Run

3. A screen may appear indicating that the certificate cannot be verified. Linksys has confirmed that the certificate is valid.

   Click **Yes**.

The web site's certificate cannot be verified. Do you want to continue?
Name: Linksys
Publisher: Linksys
Always trust content from this publisher
Yes
No
The certificate cannot be verified by a trusted source. Only continue if you trust the origin of the application.
More Information...

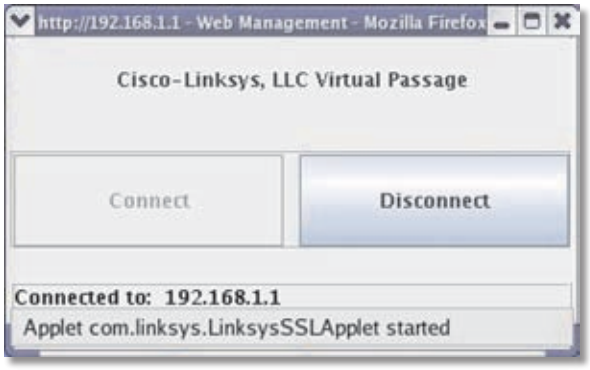
Click Yes

4. On the *Warning* screen, click **Run**.

The name of the site does not match the name on the certificate. Do you want to run the application?
Name: 192.168.1.1
Publisher: Linksys
Run
Cancel

Click Run

After the software is installed, you will be notified that the SSL VPN tunnel has been established.



SSL VPN Tunnel Established

To end the SSL VPN connection, click **Disconnect**.

Removal of the Virtual Passage Client (Linux OS)

To remove the Virtual Passage Client, follow these instructions:

1. In the sentence, "Click here to Uninstall VPN Tunnel client", click the word **here**.

Click the Word "Here"

2. After the software is removed, you will be notified. Click **OK**.

Click OK

Appendix C: Bandwidth Management

Overview

This appendix explains how to ensure Quality of Service (QoS) on Vonage Voice over Internet Protocol (VoIP) phone service. This example uses Vonage; however, similar instructions will apply to other VoIP services.

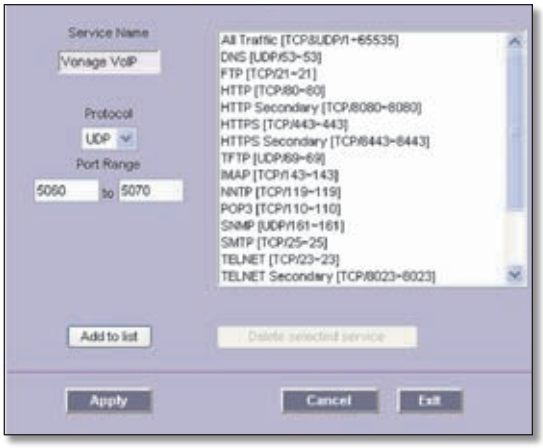
Creation of New Services

Create two new services, Vonage VoIP and Vonage 2.

1. Visit Vonage's website at http://www.vonage.com. Find out the ports used for Vonage VoIP service.
2. Access the Router's web-based utility. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **QoS** tab.
4. On the *Bandwidth Management* screen, click **Service Management**.

QoS > Bandwidth Management

5. On the *Service Management* screen, enter a name, such as Vonage VoIP, in the *Service Name* field.



Add Vonage VoIP Service

6. From the *Protocol* drop-down menu, select the protocol the VoIP service uses. For example, some VoIP devices use UDP.
7. Enter its SIP port range in the *Port Range* fields. For example, you can set the Port Range to 5060 to 5070 to make sure that all active ports are covered.
8. Click **Add to List**.
9. Add a second service. Enter a name, such as Vonage 2, in the *Service Name* field.

Add Vonage 2 Service

10. From the *Protocol* drop-down menu, select **UDP**.
11. Enter the RTP port range in the *Port Range* fields. These are required for both incoming and outgoing traffic. For example, you can set the Port Range to 10000 to 25000 to make sure that all active ports are covered.
12. Click **Add to List**.
13. Click **Apply** to save your changes.

Creation of New Bandwidth Management Rules

Create four new rules: Vonage VoIP (Upstream), Vonage VoIP (Downstream), Vonage 2 (Upstream), and Vonage 2 (Downstream).

1. On the *Bandwidth Management* screen, select **Vonage VoIP** from the *Service* drop-down menu.
2. Enter the IP address or range you need to control. To include all internal IP addresses, keep the default, **0**.
3. From the *Direction* drop-down menu, select **Upstream** for outbound traffic.
4. In the *Min. Rate* field, enter the minimum rate for the guaranteed bandwidth. For example, you can set a minimum rate of 40 kbit/sec.
5. In the *Max. Rate* field, enter the maximum rate for the maximum bandwidth. For example, you can set a maximum rate of 80 kbit/sec.
6. Select **Enable** to enable this rule.
7. After you have set up the rule, click **Add to list**.

Create Vonage VoIP Rule

8. Set up a second rule for Vonage VoIP, this time for the Downstream direction.

   Select **Vonage VoIP** from the *Service* drop-down menu.
9. Enter the IP address or range you need to control. To include all internal IP addresses, keep the default, **0**.
10. From the *Direction* drop-down menu, select **Downstream** for inbound traffic.
11. In the *Min. Rate* field, enter the minimum rate for the guaranteed bandwidth. For example, you can set a minimum rate of 40 kbit/sec.
12. In the *Max. Rate* field, enter the maximum rate for the maximum bandwidth. For example, you can set a maximum rate of 80 kbit/sec.
13. Select **Enable** to enable this rule.
14. After you have set up the rule, click **Add to list**.
15. Set up a rule for Vonage 2. Select **Vonage 2** from the *Service* drop-down menu.
16. Enter the IP address or range you need to control. To include all internal IP addresses, keep the default, **0**.
17. From the *Direction* drop-down menu, select **Upstream** for outbound traffic.
18. In the *Min. Rate* field, enter the minimum rate for the guaranteed bandwidth. For example, you can set a minimum rate of 40 kbit/sec.
19. In the *Max. Rate* field, enter the maximum rate for the maximum bandwidth. For example, you can set a maximum rate of 80 kbit/sec.
20. Select **Enable** to enable this rule.
21. After you have set up the rule, click **Add to list**.
22. Set up a second rule for Vonage 2 (Downstream). Select **Vonage 2** from the *Service* drop-down menu.
23. Enter the IP address or range you need to control. To include all internal IP addresses, keep the default, **0**.
24. From the *Direction* drop-down menu, select **Downstream** for inbound traffic.
25. In the *Min. Rate* field, enter the minimum rate for the guaranteed bandwidth. For example, you can set a minimum rate of 40 kbit/sec.
26. In the *Max. Rate* field, enter the maximum rate for the maximum bandwidth. For example, you can set a maximum rate of 80 kbit/sec.
27. Select **Enable** to enable this rule.
28. After you have set up the rule, click **Add to list**.

Create Vonage 2 Rule

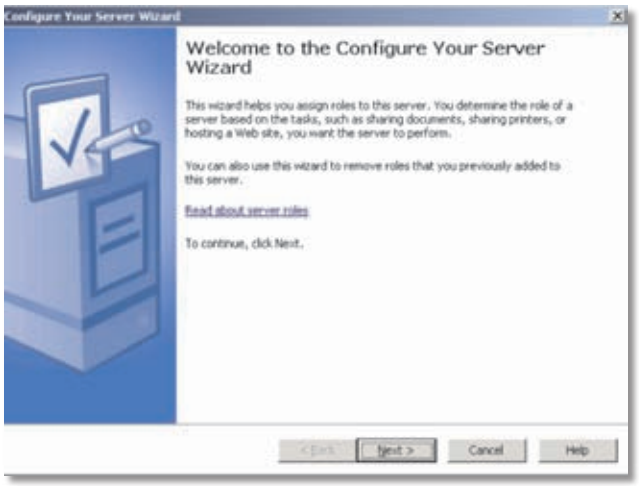
29. Click **Save Settings**.

Appendix D: Active Directory Server

NOTE: Windows Server 2000 and 2003 support the Active Directory server feature.

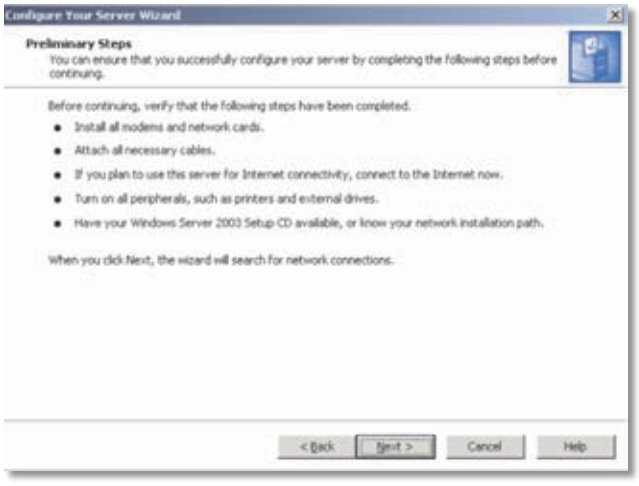
To configure an Active Directory server:

1. Click the **Start** button of your Windows computer.
2. Click **Settings**.
3. Click **Control Panel**.
4. Double-click **Administrative Tools**.
5. Click **Next**.


Configure Your Server Wizard
Welcome to the Configure Your Server Wizard
This wizard helps you assign roles to this server. You determine the role of a server based on the tasks, such as sharing documents, sharing printers, or hosting a Web site, you want the server to perform.
You can also use this wizard to remove roles that you previously added to this server.
Read about server roles
To continue, click Next.
< Back
Next >
Cancel
Help

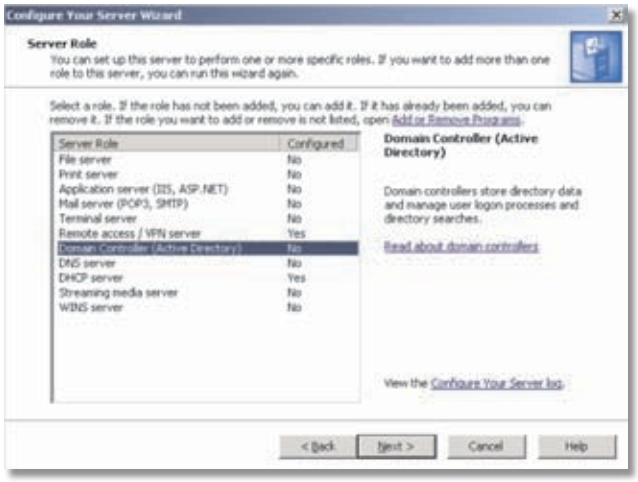
Welcome to the Configure Your Server Wizard

6. Click **Next**.


Configure Your Server Wizard
Preliminary Steps
You can ensure that you successfully configure your server by completing the following steps before continuing.
Before continuing, verify that the following steps have been completed.
Install all modems and network cards.
Attach all necessary cables.
If you plan to use this server for Internet connectivity, connect to the Internet now.
Turn on all peripherals, such as printers and external drives.
Have your Windows Server 2003 Setup CD available, or know your network installation path.
When you click Next, the wizard will search for network connections.
< Back
Next >
Cancel
Help

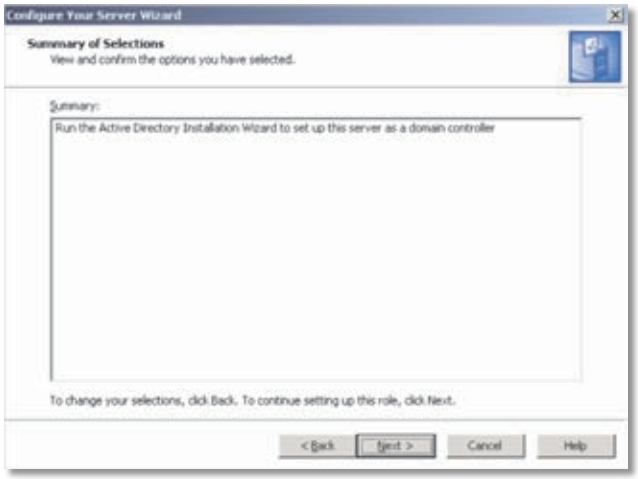
Preliminary Steps

7. Select **Domain Controller (Active Directory)**, and then click **Next**.


Configure Your Server Wizard
Server Role
You can set up this server to perform one or more specific roles. If you want to add more than one role to this server, you can run this wizard again.
Select a role. If the role has not been added, you can add it. If it has already been added, you can remove it. If the role you want to add or remove is not listed, open Add or Remove Programs.
Server Role
Configured
File server
Print server
Application server (IIS, ASP.NET)
Mail server (POP3, SMTP)
Terminal server
Remote access / VPN server
Domain Controller (Active Directory)
DNS server
DHCP server
Streaming media server
WINS server
Domain Controller (Active Directory)
Domain controllers store directory data and manage user logon processes and directory searches.
Read about domain controllers
View the Configure Your Server log.
< Back
Next >
Cancel
Help

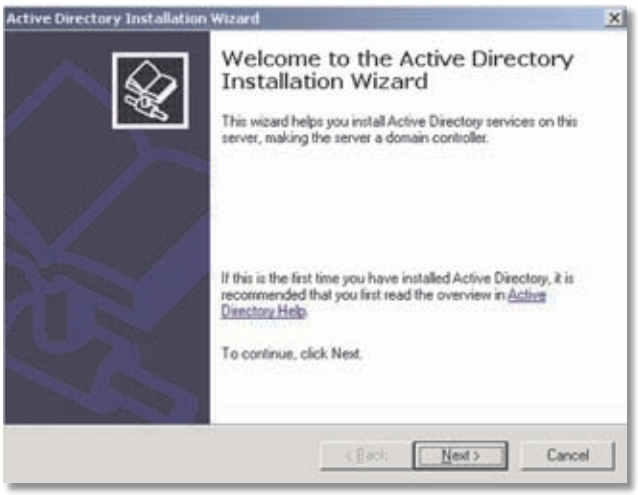
Server Role

8. Click **Next**.


Configure Your Server Wizard
Summary of Selections
View and confirm the options you have selected.
Summary:
Run the Active Directory Installation Wizard to set up this server as a domain controller
To change your selections, click Back. To continue setting up this role, click Next.
< Back
Next >
Cancel
Help

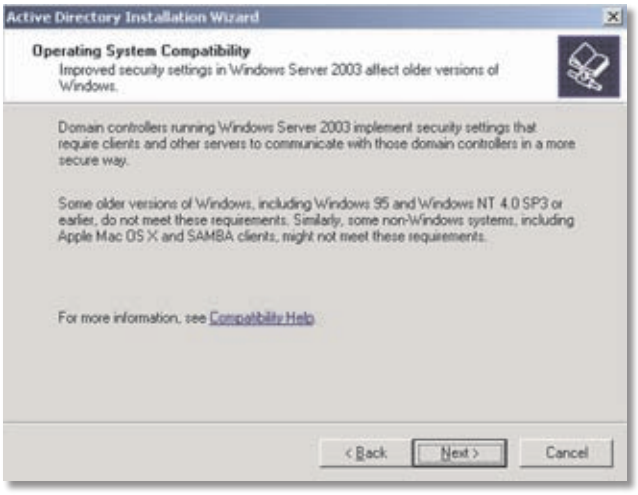
Summary of Selections

9. Click **Next**.


Active Directory Installation Wizard
Welcome to the Active Directory Installation Wizard
This wizard helps you install Active Directory services on this server, making the server a domain controller.
If this is the first time you have installed Active Directory, it is recommended that you first read the overview in Active Directory Help.
To continue, click Next.
< Back
Next >
Cancel

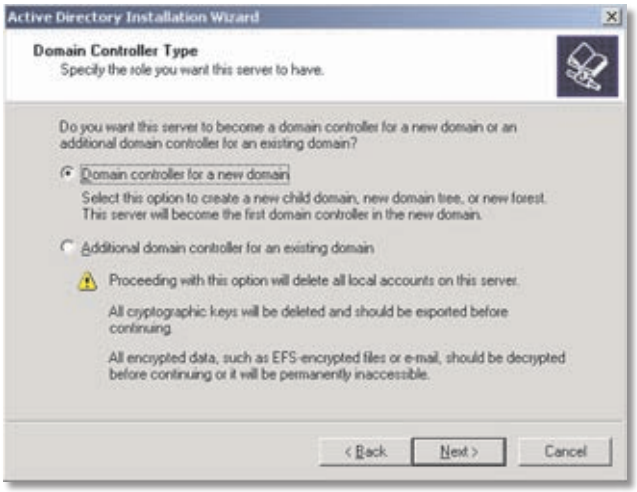
Welcome to the Active Directory Installation Wizard

10. Click **Next**.


Active Directory Installation Wizard
Operating System Compatibility
Improved security settings in Windows Server 2003 affect older versions of Windows.
Domain controllers running Windows Server 2003 implement security settings that require clients and other servers to communicate with those domain controllers in a more secure way.
Some older versions of Windows, including Windows 95 and Windows NT 4.0 SP3 or earlier, do not meet these requirements. Similarly, some non-Windows systems, including Apple Mac OS X and SAMBA clients, might not meet these requirements.
For more information, see Compatibility Help.
< Back
Next >
Cancel

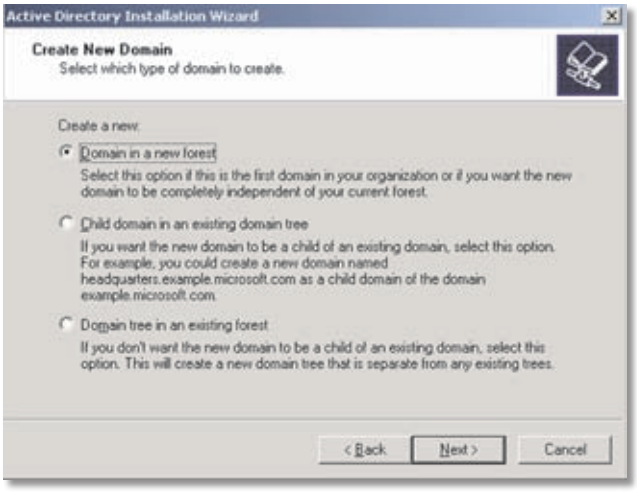
Operating System Compatibility

11. Select **Domain controller for a new domain**, and then click **Next**.


Active Directory Installation Wizard
Domain Controller Type
Specify the role you want this server to have.
Do you want this server to become a domain controller for a new domain or an additional domain controller for an existing domain?
Domain controller for a new domain
Select this option to create a new child domain, new domain tree, or new forest. This server will become the first domain controller in the new domain.
Additional domain controller for an existing domain
Proceeding with this option will delete all local accounts on this server.
All cryptographic keys will be deleted and should be exported before continuing.
All encrypted data, such as EFS-encrypted files or e-mail, should be decrypted before continuing or it will be permanently inaccessible.
< Back
Next >
Cancel

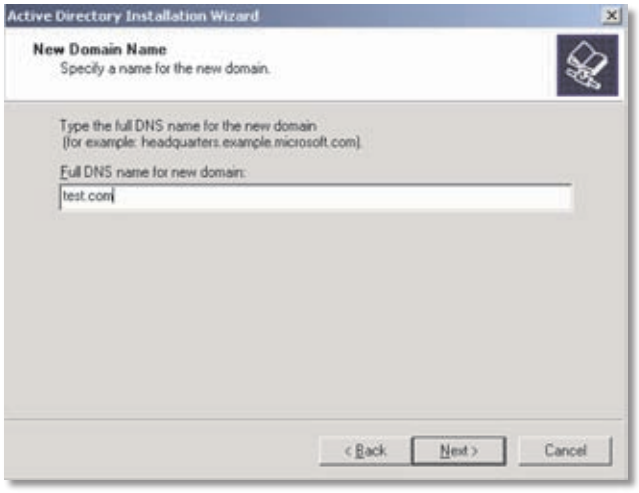
Domain Controller Type

12. Select **Domain in a new forest**, and then click **Next**.


Active Directory Installation Wizard
Create New Domain
Select which type of domain to create.
Create a new:
Domain in a new forest
Select this option if this is the first domain in your organization or if you want the new domain to be completely independent of your current forest.
Child domain in an existing domain tree
If you want the new domain to be a child of an existing domain, select this option. For example, you could create a new domain named headquarters.example.microsoft.com as a child domain of the domain example.microsoft.com.
Domain tree in an existing forest
If you don't want the new domain to be a child of an existing domain, select this option. This will create a new domain tree that is separate from any existing trees.
< Back
Next >
Cancel

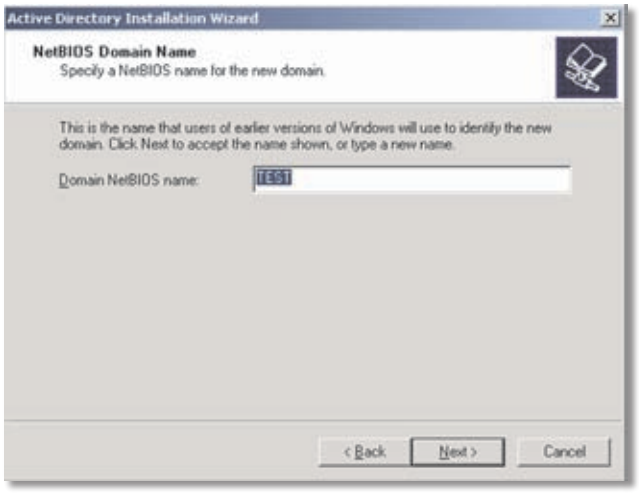
Create New Domain

13. Enter a domain name, and then click **Next**.


Active Directory Installation Wizard
New Domain Name
Specify a name for the new domain.
Type the full DNS name for the new domain.
(for example: headquarters.example.microsoft.com).
Full DNS name for new domain:
test.com
< Back
Next >
Cancel

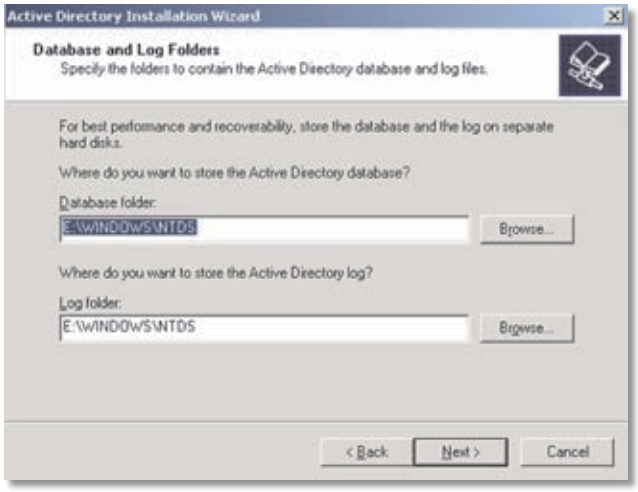
New Domain Name

14. Enter a domain NetBIOS name, and then click **Next**.


Active Directory Installation Wizard
NetBIOS Domain Name
Specify a NetBIOS name for the new domain.
This is the name that users of earlier versions of Windows will use to identify the new domain. Click Next to accept the name shown, or type a new name.
Domain NetBIOS name:
TEST
< Back
Next >
Cancel

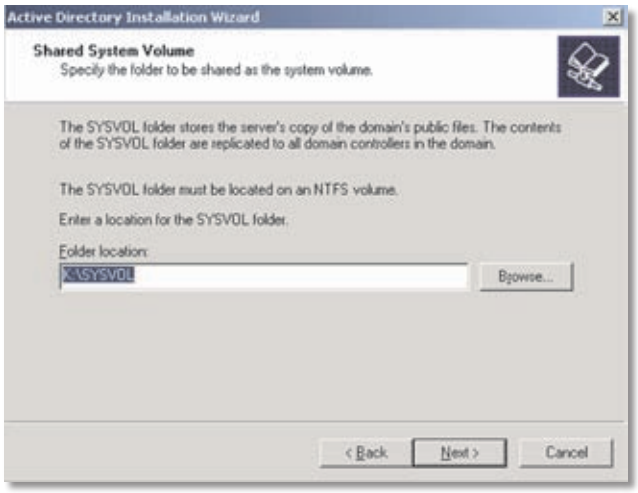
NetBIOS Domain Name

15. Select the folders that will store the Active Directory database and log. Then click **Next**.


Active Directory Installation Wizard
Database and Log Folders
Specify the folders to contain the Active Directory database and log files.
For best performance and recoverability, store the database and the log on separate hard disks.
Where do you want to store the Active Directory database?
Database folder:
E:\WINDOWS\NTDS
Browse...
Where do you want to store the Active Directory log?
Log folder:
E:\WINDOWS\NTDS
Browse...
< Back
Next >
Cancel

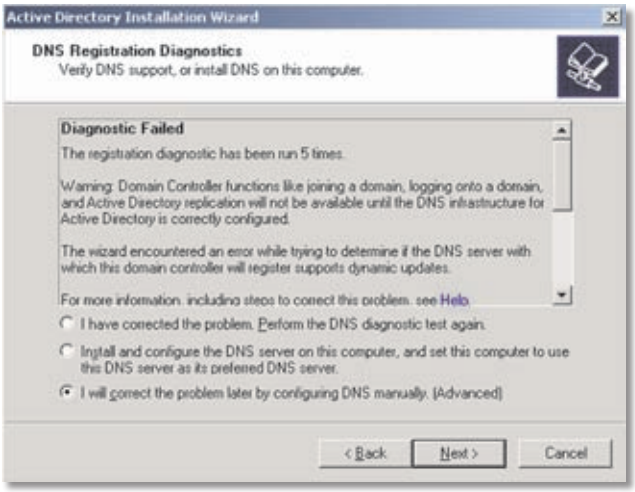
Database and Log Folders

16. Enter a location for the SYSVOL folder, and then click **Next**.


Active Directory Installation Wizard
Shared System Volume
Specify the folder to be shared as the system volume.
The SYSVOL folder stores the server's copy of the domain's public files. The contents of the SYSVOL folder are replicated to all domain controllers in the domain.
The SYSVOL folder must be located on an NTFS volume.
Enter a location for the SYSVOL folder.
Folder location:
X:\SYSVOL
Browse...
< Back
Next >
Cancel

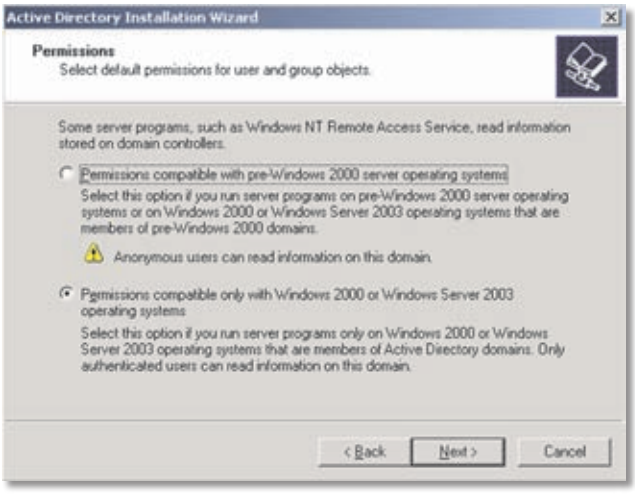
Shared System Volume

17. Select **I will correct the problem later by configuring DNS manually (Advanced)**, and then click **Next**.


Active Directory Installation Wizard
DNS Registration Diagnostics
Verify DNS support, or install DNS on this computer.
Diagnostic Failed
The registration diagnostic has been run 5 times.
Warning: Domain Controller functions like joining a domain, logging onto a domain, and Active Directory replication will not be available until the DNS infrastructure for Active Directory is correctly configured.
The wizard encountered an error while trying to determine if the DNS server with which this domain controller will register supports dynamic updates.
For more information, including steps to correct this problem, see Help.
I have corrected the problem. Perform the DNS diagnostic test again.
Install and configure the DNS server on this computer, and set this computer to use this DNS server as its preferred DNS server.
I will correct the problem later by configuring DNS manually. (Advanced)
< Back
Next >
Cancel

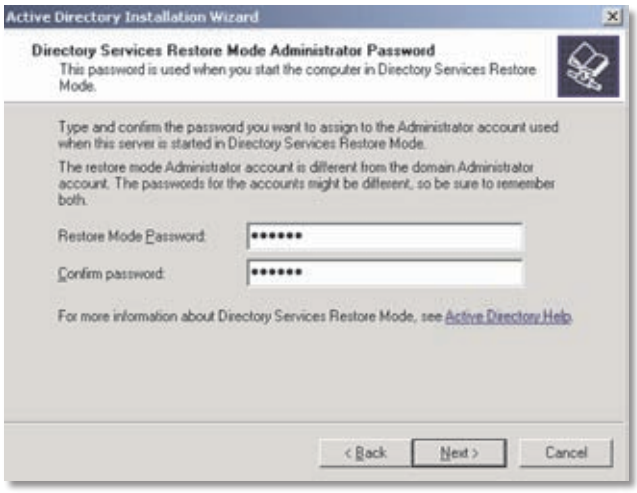
DNS Registration Diagnostics

18. Select **Permissions compatible only with Windows 2000 or Windows Server 2003 operating systems**. Then click **Next**.


Active Directory Installation Wizard
Permissions
Select default permissions for user and group objects.
Some server programs, such as Windows NT Remote Access Service, read information stored on domain controllers.
Permissions compatible with pre-Windows 2000 server operating systems
Select this option if you run server programs on pre-Windows 2000 server operating systems or on Windows 2000 or Windows Server 2003 operating systems that are members of pre-Windows 2000 domains.
Anonymous users can read information on this domain.
Permissions compatible only with Windows 2000 or Windows Server 2003 operating systems
Select this option if you run server programs only on Windows 2000 or Windows Server 2003 operating systems that are members of Active Directory domains. Only authenticated users can read information on this domain.
< Back
Next >
Cancel

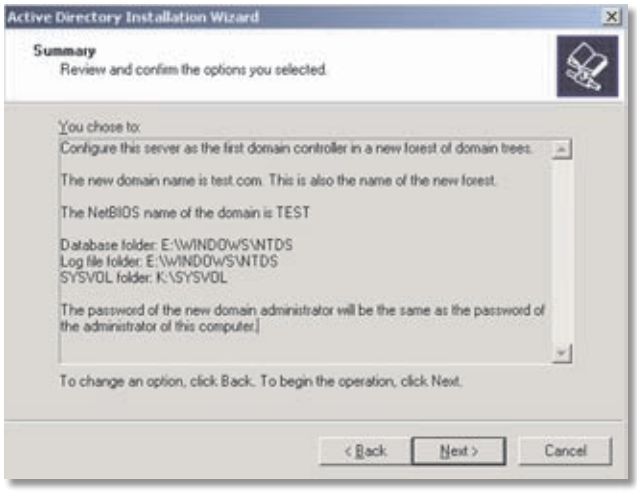
Permissions

19. Enter your Administrator password for the Active Directory server. Then enter it again in the *Confirm password* field. Click **Next**.


Active Directory Installation Wizard
Directory Services Restore Mode Administrator Password
This password is used when you start the computer in Directory Services Restore Mode.
Type and confirm the password you want to assign to the Administrator account used when this server is started in Directory Services Restore Mode.
The restore mode Administrator account is different from the domain Administrator account. The passwords for the accounts might be different, so be sure to remember both.
Restore Mode Password:
Confirm password:
For more information about Directory Services Restore Mode, see Active Directory Help.
< Back
Next >
Cancel

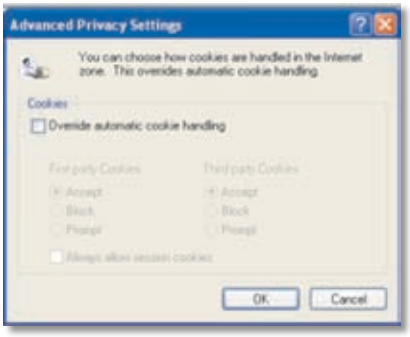
Directory Services Restore Mode Administrator Password

20. Click **Next**.


Active Directory Installation Wizard
Summary
Review and confirm the options you selected.
You chose to:
Configure this server as the first domain controller in a new forest of domain trees.
The new domain name is test.com. This is also the name of the new forest.
The NetBIOS name of the domain is TEST
Database folder: E:\WINDOWS\NTDS
Log file folder: E:\WINDOWS\NTDS
SYSVOL folder: K:\SYSVOL
The password of the new domain administrator will be the same as the password of the administrator of this computer.
To change an option, click Back. To begin the operation, click Next.
< Back
Next >
Cancel

Summary

21. The wizard configures Active Directory automatically, and it notifies you when the configuration is complete.


Advanced Privacy Settings
You can choose how cookies are handled in the Internet zone. This overrides automatic cookie handling.
Cookies
Override automatic cookie handling
OK
Cancel

Active Directory Installation Wizard

Troubleshooting

If your users are unable to connect via Active Directory, check the following:

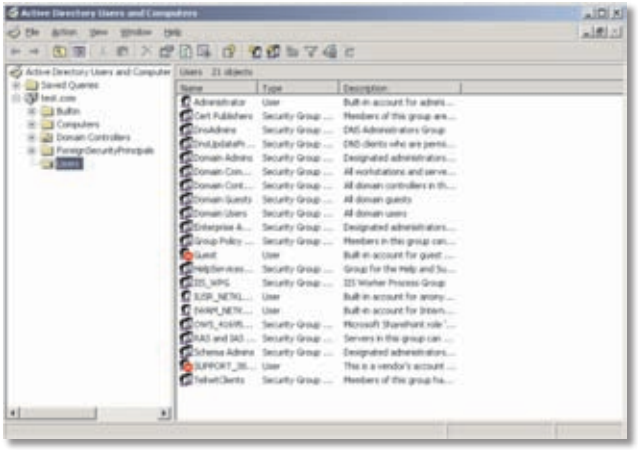
- The time settings between the Active Directory server and the Router must be synchronized. Kerberos authentication, used by Active Directory to authenticate clients, permits a maximum of a 15-minute time difference between the Windows server and the client (the Router).
- Make sure that your Windows server is configured for Active Directory authentication. If you are using a Windows NT 4.0 server, then your server only supports NT Domain authentication. Typically, Windows 2000 and 2003 servers are also configured for NT Domain authentication to support legacy Windows clients.

Appendix E: User for the Active Directory Server

NOTE: Windows Server 2000 and 2003 support the Active Directory server feature.

To create a user for Active Directory:

1. Click the **Start** button of your Windows computer.
2. Click **Settings**.
3. Click **Control Panel**.
4. Double-click **Administrative Tools**.
5. Click **Active Directory Users and Computers**.
6. To create a user, right-click **Users**.



Active Directory Users and Computers

7. Enter the user information in the various name fields.

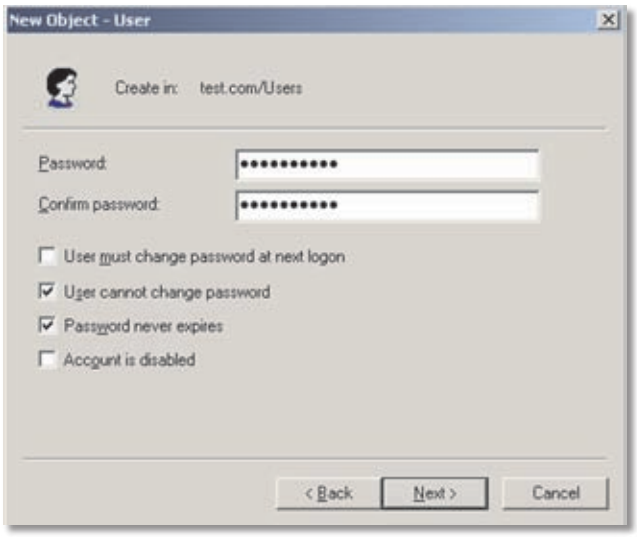
   Enter a User login name, and select the appropriate domain from the drop-down menu.

   Then click **Next**.

New Object > User > Name

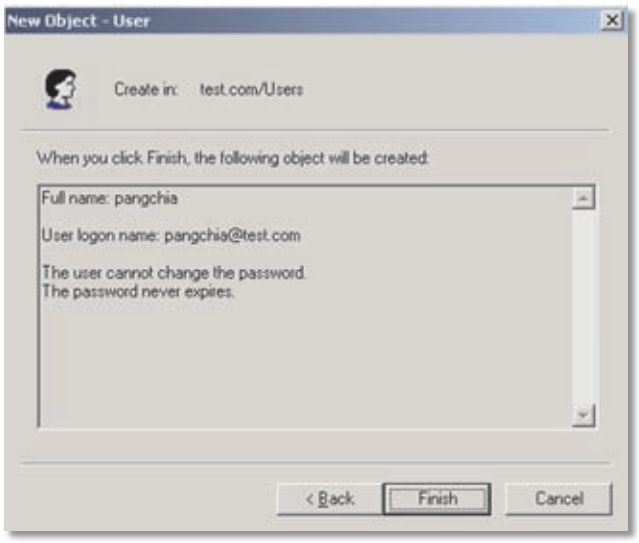
8. Enter the user password, and enter it again in the *Confirm password* field.

   Then click **Next**.



New Object > User > Password

9. Click **Finish** to create the new user.



New Object > User > Summary

Appendix F: Internet Authentication Service (IAS) Server

NOTE: Windows Server 2000 and 2003 support the IAS server feature.

To install an IAS server:

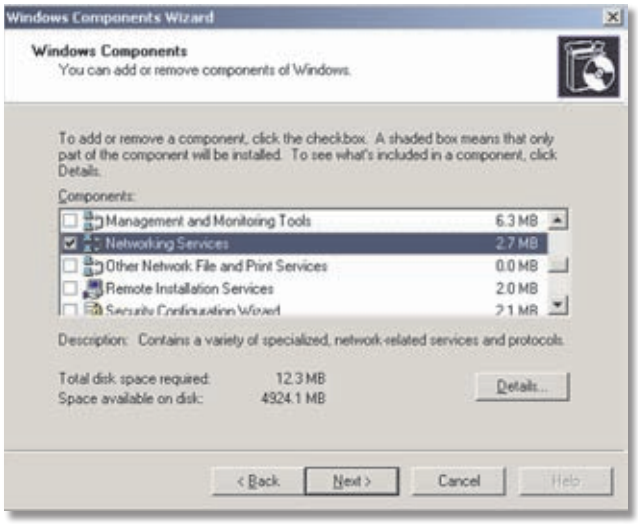
1. Click the **Start** button of your Windows computer.
2. Click **Add or Remove Programs**.
3. Click **Add/Remove Windows Components**.

Add or Remove Programs

4. In the Components section, click **Networking Services**. Click **Details**.

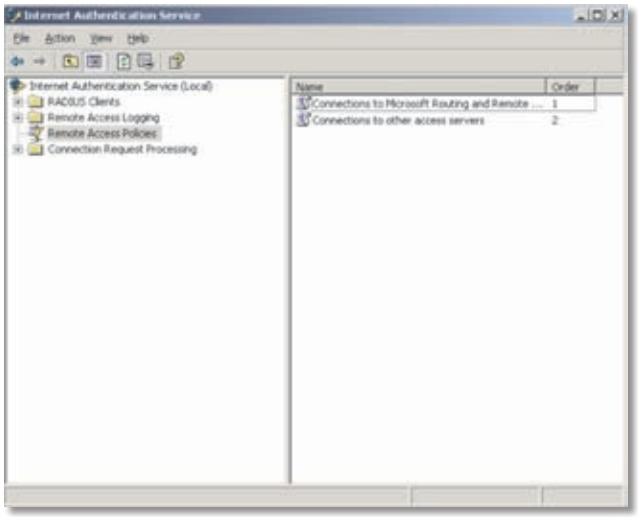
   Select **Internet Authentication Service**. Click **OK**.

   Then click **Next**.


Windows Components Wizard
Windows Components
You can add or remove components of Windows.
To add or remove a component, click the checkbox. A shaded box means that only part of the component will be installed. To see what's included in a component, click Details.
Components:
Management and Monitoring Tools 6.3 MB
Networking Services 2.7 MB
Other Network File and Print Services 0.0 MB
Remote Installation Services 2.0 MB
Description: Contains a variety of specialized, network-related services and protocols.
Total disk space required: 12.3 MB
Space available on disk: 4924.1 MB
Details...
< Back
Next >
Cancel
Help

Windows Components

5. Click the **Start** button of your Windows computer.
6. Click **Settings**.
7. Click **Control Panel**.
8. Double-click **Administrative Tools**.
9. Click **Internet Authentication Service**.
10. Right-click **Remote Access Policies**, and click **New Remote Access Policy**.



Internet Authentication Service

11. Click **Next**.

New Remote Access Policy Wizard
Welcome to the New Remote Access Policy Wizard
This wizard helps you set up a remote access policy, which is a set of conditions that determine which connection requests are granted access by this server.
To continue, click Next.
< Back
Next >
Cancel

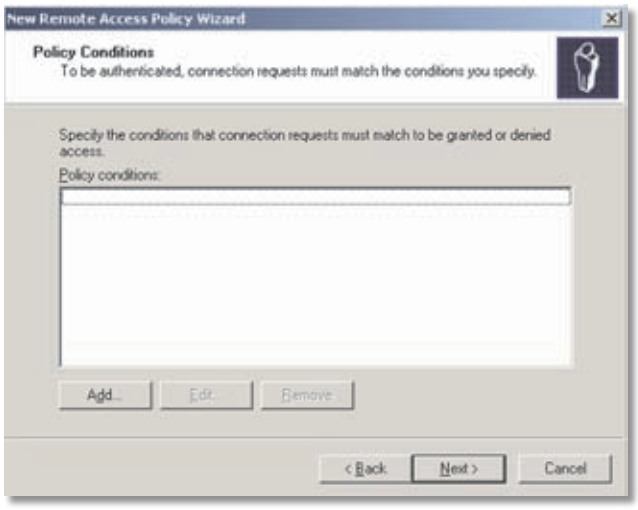
Welcome to the New Remote Access Policy Wizard

12. Select **Set up a custom policy**, and enter a policy name. Then click **Next**.

New Remote Access Policy Wizard
Policy Configuration Method
The wizard can create a typical policy, or you can create a custom policy.
How do you want to set up this policy?
Use the wizard to set up a typical policy for a common scenario
Set up a custom policy
Type a name that describes this policy.
Policy name:
RVL200
Example: Authenticate all VPN connections.
< Back
Next >
Cancel

Policy Configuration Method

13. To add a policy, click **Add**.


New Remote Access Policy Wizard
Policy Conditions
To be authenticated, connection requests must match the conditions you specify.
Specify the conditions that connection requests must match to be granted or denied access.
Policy conditions:
Add...
Edit...
Remove
< Back
Next >
Cancel

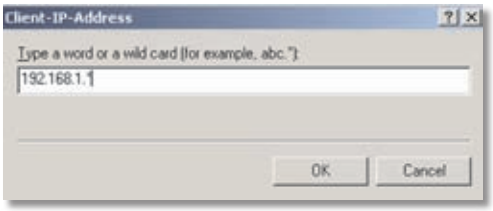
Policy Conditions

14. Select **Client-IP-Address**, and then click **Add**.

Select Attribute

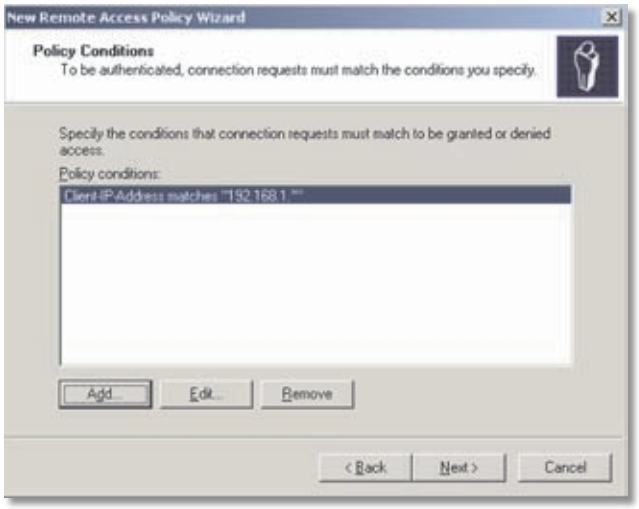
15. Enter an IP address, and then click **OK**.

    Enter the Router's LAN IP address.



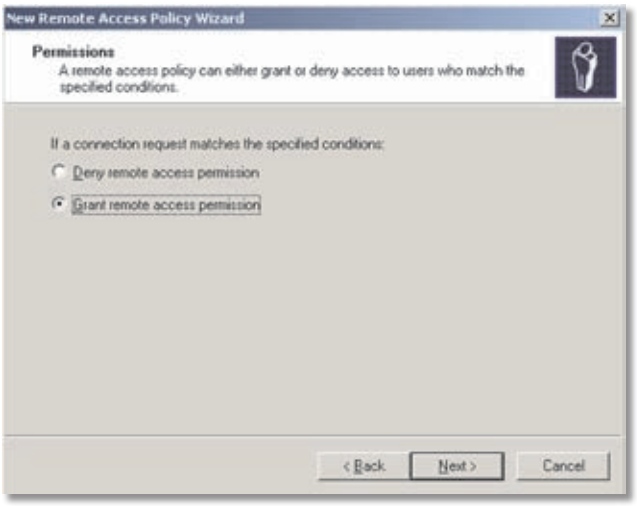
Client-IP-Address

16. Make sure a policy has been added, and then click **Next**.


New Remote Access Policy Wizard
Policy Conditions
To be authenticated, connection requests must match the conditions you specify.
Specify the conditions that connection requests must match to be granted or denied access.
Policy conditions:
Client-IP-Address matches "192.168.1.*"
Add...
Edit...
Remove
< Back
Next >
Cancel

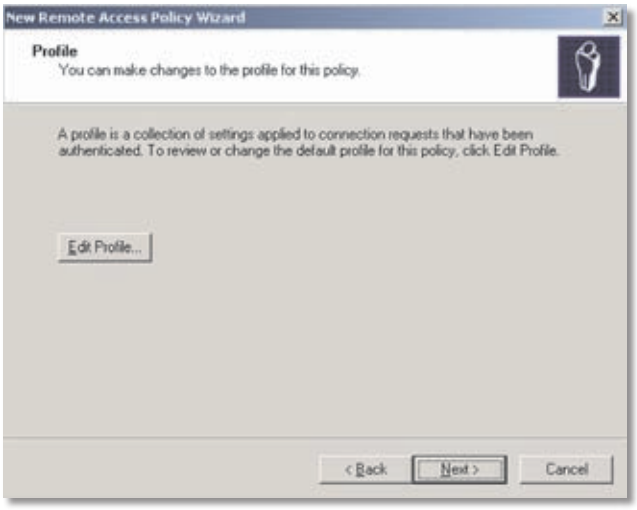
Policy Conditions

17. Select **Grant remote access permission**, and then click **Next**.


New Remote Access Policy Wizard
Permissions
A remote access policy can either grant or deny access to users who match the specified conditions.
If a connection request matches the specified conditions:
Deny remote access permission
Grant remote access permission
< Back
Next >
Cancel

Permissions

18. Click **Edit Profile**.

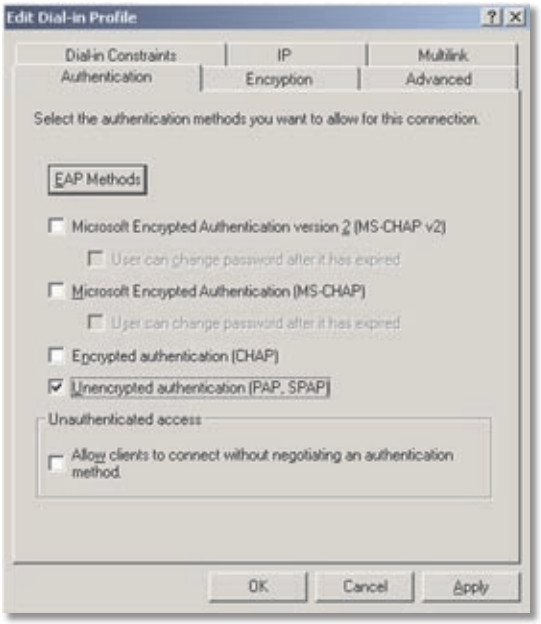

New Remote Access Policy Wizard
Profile
You can make changes to the profile for this policy.
A profile is a collection of settings applied to connection requests that have been authenticated. To review or change the default profile for this policy, click Edit Profile.
Edit Profile...
< Back
Next >
Cancel

Profile

19. On the Authentication tab, deselect (remove the checkmark from) **Microsoft Encryption Authentication version 2** and **Microsoft Encrypted Authentication**.

    Select **Unencrypted authentication**.

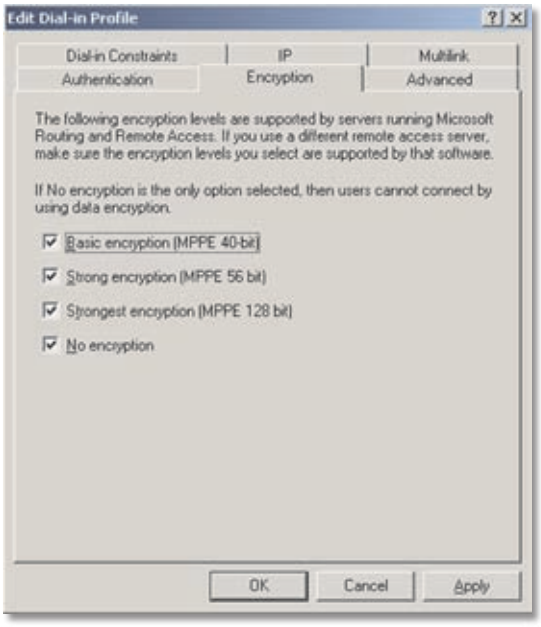
    Click **Apply**.



Authentication

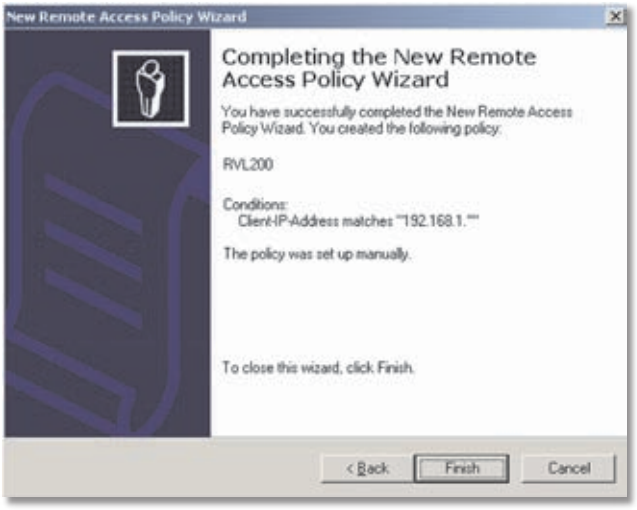
20. On the Encryption tab, select **Basic encryption**, **Strong encryption**, **Strongest encryption**, and **No encryption**.

    Click **Apply**.


Edit Dial-in Profile
Dial-in Constraints
IP
Multilink
Authentication
Encryption
Advanced
The following encryption levels are supported by servers running Microsoft Routing and Remote Access. If you use a different remote access server, make sure the encryption levels you select are supported by that software.
If No encryption is the only option selected, then users cannot connect by using data encryption.
Basic encryption (MPPE 40-bit)
Strong encryption (MPPE 56 bit)
Strongest encryption (MPPE 128 bit)
No encryption
OK
Cancel
Apply

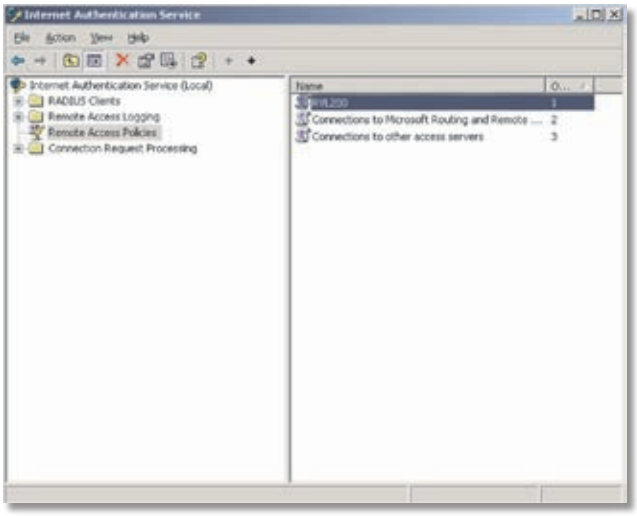
Encryption

21. Click **Finish**.


New Remote Access Policy Wizard
Completing the New Remote Access Policy Wizard
You have successfully completed the New Remote Access Policy Wizard. You created the following policy:
RVL200
Conditions:
Client-IP-Address matches "192.168.1.*"
The policy was set up manually.
To close this wizard, click Finish.
< Back
Finish
Cancel

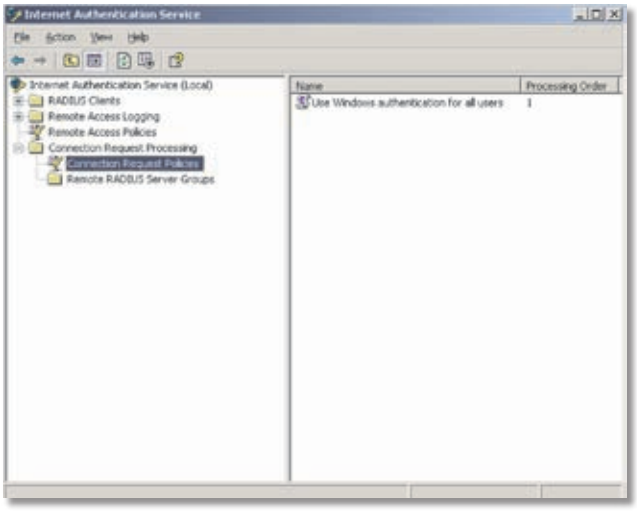
Completing the New Remote Access Policy Wizard

22. Make sure the policy has been added.
23. Click the **Start** button.
24. Click **Settings**.
25. Click **Control Panel**.
26. Double-click **Administrative Tools**.
27. Click **Internet Authentication Service**.



Internet Authentication Service

28. Right-click **Remote Access Policies**, and click **New Connection Request Policy**.



Connection Request Policies

29. Click **Next**.

New Connection Request Policy Wizard
Welcome to the New Connection Request Policy Wizard
This wizard helps you set up rules for processing connection requests sent by network access servers.
These rules determine whether connection requests that meet the criteria you specify are processed on this server or on a group of remote RADIUS servers.
If users connect to this server through a virtual private network (VPN) or by dialing directly, do not create a policy. The IAS default policy is set up to accommodate this scenario.
To continue, click Next.
< Back
Next >
Cancel

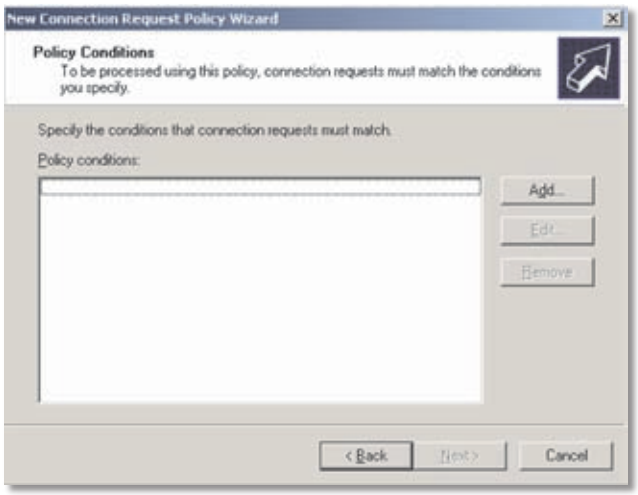
Welcome to the New Connection Request Policy Wizard

30. Select **A custom policy**, and enter a policy name. Then click **Next**.

New Connection Request Policy Wizard
Policy Configuration Method
You can set up a typical policy or a custom policy.
What kind of policy do you want to set up?
A typical policy for a common scenario
A custom policy
Type a name that describes this policy.
Policy name:
RVL200
Example: Authenticate all requests on this server
< Back
Next >
Cancel

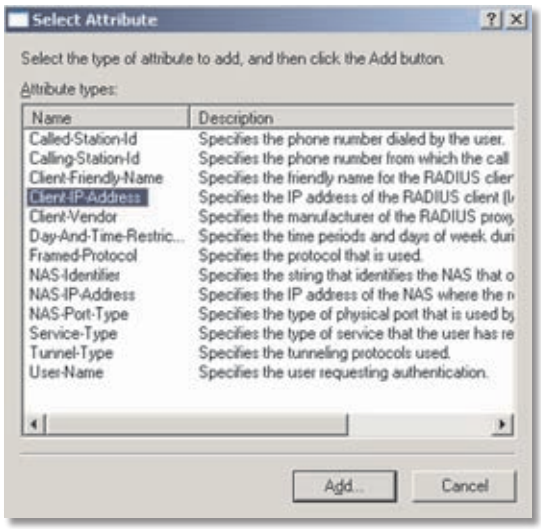
Policy Configuration Method

31. To add a policy, click **Add**.



Policy Conditions

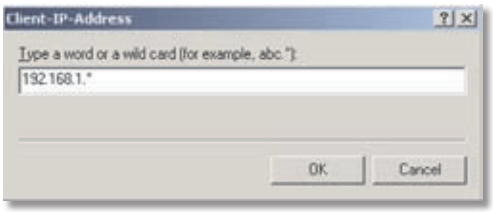
32. Select **Client-IP-Address**, and then click **Add**.


Select Attribute
Select the type of attribute to add, and then click the Add button.
Attribute types:
Name
Description
Called-Station-Id
Specifies the phone number dialed by the user.
Calling-Station-Id
Specifies the phone number from which the call
Client-Friendly-Name
Specifies the friendly name for the RADIUS clier
Client-IP-Address
Specifies the IP address of the RADIUS client
Client-Vendor
Specifies the manufacturer of the RADIUS proxy
Day-And-Time-Restric...
Specifies the time periods and days of week duri
Framed-Protocol
Specifies the protocol that is used.
NAS-Identifier
Specifies the string that identifies the NAS that o
NAS-IP-Address
Specifies the IP address of the NAS where the r
NAS-Port-Type
Specifies the type of physical port that is used by
Service-Type
Specifies the type of service that the user has re
Tunnel-Type
Specifies the tunneling protocols used.
User-Name
Specifies the user requesting authentication.
Add...
Cancel

Select Attribute

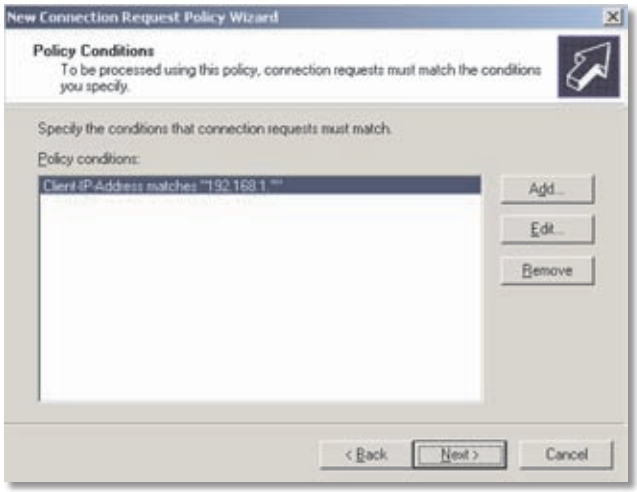
33. Enter an IP address, and then click **OK**.

Enter the Router's LAN IP address.



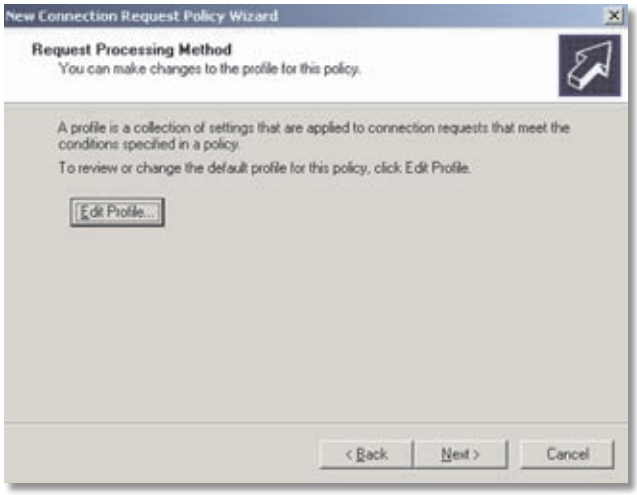
Client-IP-Address

34. Make sure a policy has been added, and then click **Next**.



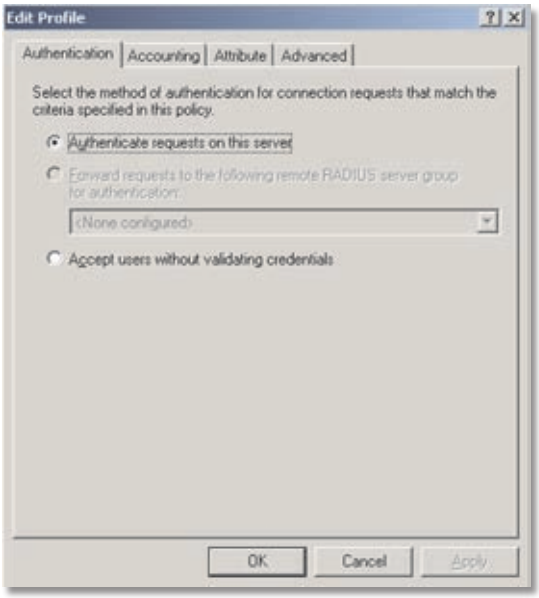
Policy Conditions

35. Click **Edit Profile**.


New Connection Request Policy Wizard
Request Processing Method
You can make changes to the profile for this policy.
A profile is a collection of settings that are applied to connection requests that meet the conditions specified in a policy.
To review or change the default profile for this policy, click Edit Profile.
Edit Profile...
< Back
Next >
Cancel

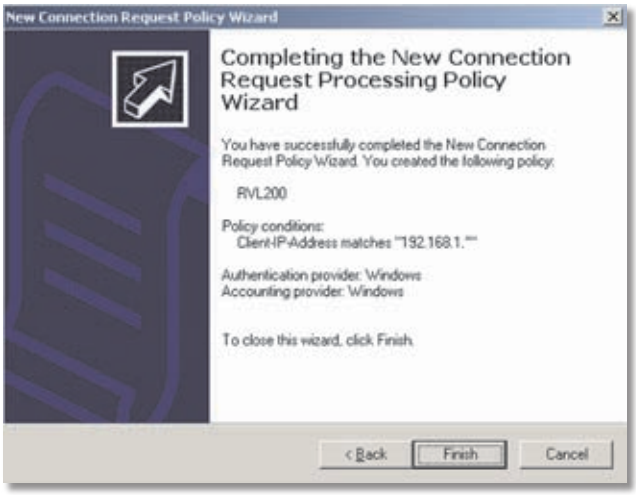
Request Processing Method

36. On the Authentication tab, select **Authenticate request on this server**, and then click **OK**.



Authentication

37. Click **Finish**.


New Connection Request Policy Wizard
Completing the New Connection Request Processing Policy Wizard
You have successfully completed the New Connection Request Policy Wizard. You created the following policy:
RVL200
Policy conditions:
Client-IP-Address matches "192.168.1.*"
Authentication provider: Windows
Accounting provider: Windows
To close this wizard, click Finish.
< Back
Finish
Cancel

Completing the New Connection Request Processing Policy Wizard

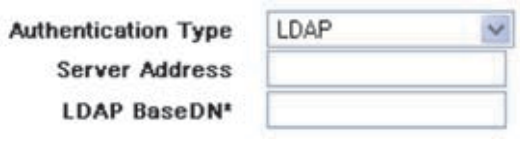
Appendix G: Lightweight Directory Access Protocol (LDAP) Server

1. Access the Router's web-based utility.
2. Click the **SSL VPN** tab.
3. Click the **User Management** tab.
4. From the *Authentication Type* drop-down menu, select **LDAP**.

SSL VPN > User Management

5. In the *Server Address* field, enter the IP address or domain name of the server.
6. In the *LDAP BaseDN** field, enter the Base Distinguished Name defined in the configuration file of your LDAP server.

NOTE: User names and passwords should be defined in the configuration file of your LDAP server. For more information, refer to the documentation for your LDAP server.



LDAP Settings

7. Click **Save Settings**.

Appendix H: Deployment in an Existing Network

Overview

If you have a current VPN router in your network, you can add the 4-Port SSL/IPSec VPN Router (model number: RVL200), so that the SSL clients can access the existing network resources.

The two configuration examples are for LAN<=>WAN and LAN<=>LAN, between a 4-Port SSL/IPSec VPN Router and an existing VPN Router, such as the Linksys 10/100 16-, 8-, or 4-Port VPN Router (model numbers: RV016, RV082, or RV042).

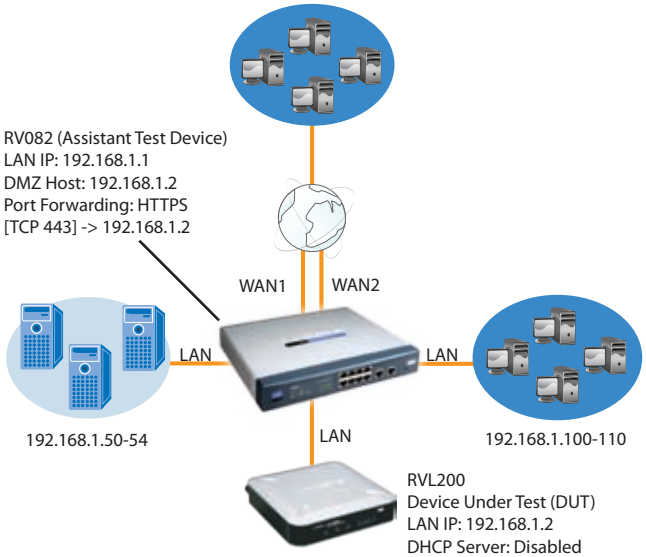
- LAN<=>WAN

  The Routers are on different networks (192.168.1.x and 192.168.2.x).

- LAN<=>LAN

  The Routers are on the same network (192.168.1x).

LAN-to-LAN Connection



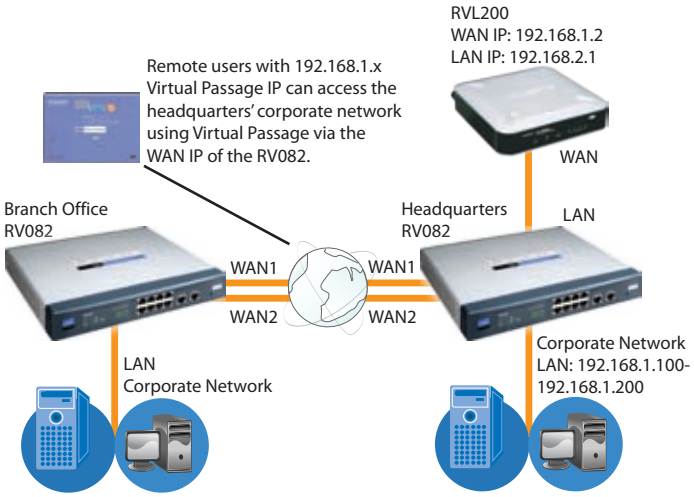
RVL200 LAN to RV082 LAN

To connect the RVL200 LAN to the RV082 LAN:

1. Physically connect a numbered port (Ethernet 1-4) on the RVL200 to a LAN port on the RV082.
2. Access the web-based utility of the RVL200. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **DHCP** tab.
4. Remove the checkmark from the *Enable DHCP Server* setting.
5. Click **Save Settings**.
6. Click the **Setup** tab.
7. Click the Advanced Routing tab.
8. In the **Static Routing** section, enter **0.0.0.0** in the *Destination IP* field.
9. Enter **0.0.0.0** in the *Subnet Mask* field.
10. Enter **192.168.1.1** in the *Default Gateway* field.
11. Enter **1** in the *Hop Count* field.
12. Select **LAN** from the *Interface* drop-down menu.
13. Click **Add to list**.
14. Access the web-based utility of the RV082.
15. Click the **Setup** tab.
16. Click the **DMZ Host** tab. Configure the RVL200 as the DMZ Host for the RV082. Enter **192.168.1.2**, the IP address of the RVL200.
17. Click the **Forwarding** tab.
18. Select **HTTPS[TCP/443~443]** from the *Service* drop-down menu.
19. Enter the IP address of the RVL200, **192.168.1.2**.
20. Enable the entry.
21. Click **Add to list**.

After an SSL VPN client establishes its connection, the client can access the existing computers (192.168.1.100-110) or the servers (192.168.1.50-54) on the RV082 LAN side.

WAN-to-LAN Connection



RVL200 WAN to RV082 LAN

To connect the RVL200 WAN to the RV082 LAN:

1. Physically connect the Internet port on the RVL200 to a LAN port on the RV082.
2. Configure the Virtual Passage IP so it is in the network range of the RV082 LAN side.

After an SSL VPN client establishes its connection, the client can access the existing computers and servers (192.168.1.100-200) on the RV082 LAN side.

Appendix I: Gateway-to-Gateway VPN Tunnel

Overview

This appendix explains how to configure an IPSec VPN tunnel between two VPN Routers by example. Two computers are used to test the liveliness of the tunnel.

Before You Begin

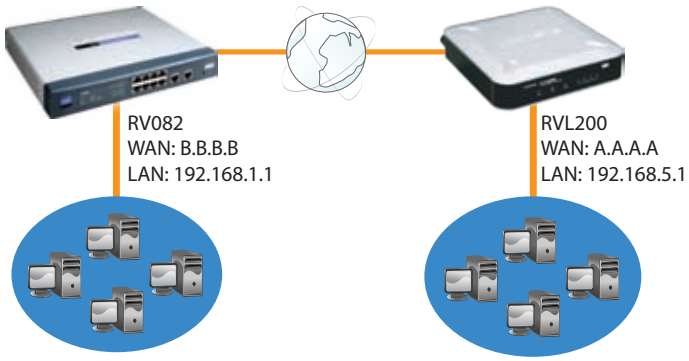
The following is a list of equipment you need:

- Two Windows desktop computers (each computer will be connected to a VPN Router)
- Two VPN Routers (4-Port SSL/IPSec VPN Router, model number: RVL200, and 10/100 8-Port VPN Router, model number: RV082) that are both connected to the Internet

Any VPN Router can be deployed, such as the Linksys 10/100 16-, 8-, or 4-Port VPN Router (model numbers: RV016, RV082, or RV042); however, this example uses the RV082.

Configuration when the Remote Gateway Uses a Static IP Address

This example assumes the Remote Gateway is using a static IP address. If the Remote Gateway uses a dynamic IP address, refer to "Configuration when the Remote Gateway Uses a Dynamic IP Address."



Gateway-to-Gateway IPSec VPN Tunnel - Remote Gateway Using Static IP

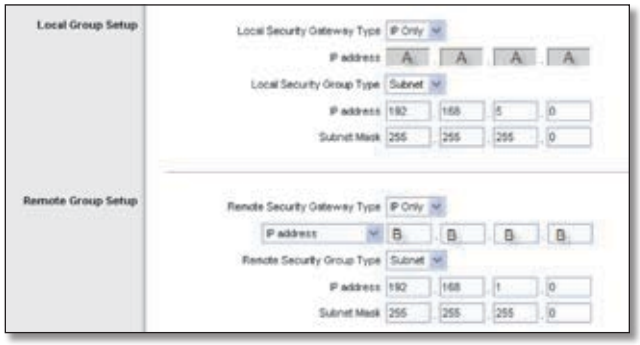
NOTE: Each computer must have a network adapter installed.

Configuration of the RVL200

Follow these instructions for the first VPN Router, designated RVL200. The other VPN Router is designated the RV082.

1. Launch the web browser for a networked computer, designated PC 1.
2. Access the web-based utility of the RVL200. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **IPSec VPN** tab.
4. Click the **Gateway to Gateway** tab.
5. Enter a name in the *Tunnel Name* field.
6. For the VPN Tunnel setting, select **Enable**.
7. The WAN IP address (A.A.A.A) of the RVL200 will be automatically detected.

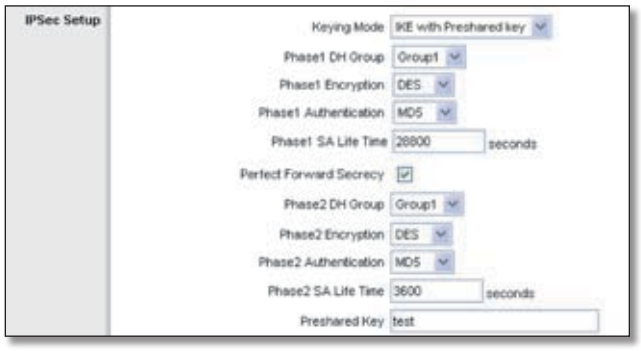
   For the Local Security Group Type, select **Subnet**. Enter the RVL200's local network settings in the *IP Address* and *Subnet Mask* fields.



RVL200 IPSec VPN Settings

8. For the Remote Security Gateway Type, select **IP address**. Enter the RV082's WAN IP address in the *IP Address* field.
9. For the Remote Security Group Type, select **Subnet**. Enter the RV082's local network settings in the *IP Address* and *Subnet Mask* fields.

10. In the IPSec Setup section, select the appropriate encryption, authentication, and other key management settings.
11. In the *Preshared Key* field, enter a string for this key, for example, 13572468.



RVL200 IPSec Setup Settings

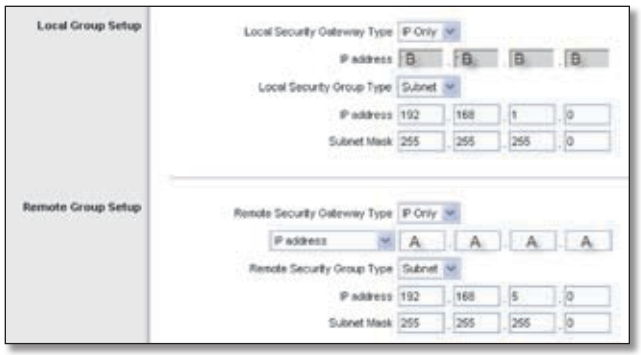
12. If you need more detailed settings, click **Advanced Settings**. Otherwise, click **Save Settings** and proceed to the next section, "Configuration of the RV082."

Configuration of the RV082

Follow similar instructions for the RV082.

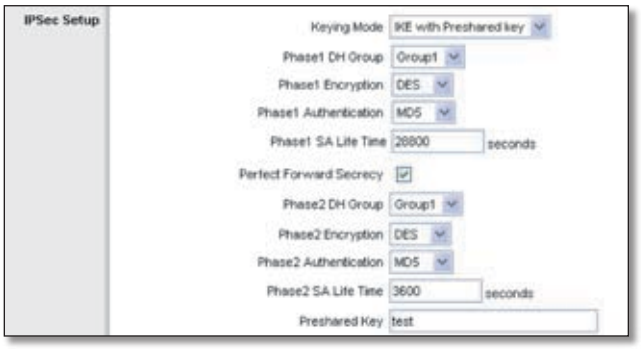
1. Launch the web browser for a networked computer, designated PC 2.
2. Access the web-based utility of the RV082. (Refer to the User Guide of the RV082 for details.)
3. Click the **IPSec VPN** tab.
4. Click the **Gateway to Gateway** tab.
5. Enter a name in the *Tunnel Name* field.
6. For the VPN Tunnel setting, select **Enable**.
7. The WAN IP address (B.B.B.B) of the RV082 will be automatically detected.

   For the Local Security Group Type, select **Subnet**. Enter the RV082's local network settings in the *IP Address* and *Subnet Mask* fields.



RV082 VPN Settings

8. For the Remote Security Gateway Type, select **IP address**. Enter the RVL200's WAN IP address in the *IP Address* field.
9. For the Remote Security Group Type, select **Subnet**. Enter the RVL200's local network settings in the *IP Address* and *Subnet Mask* fields.
10. In the IPSec Setup section, select the appropriate encryption, authentication, and other key management settings. (These should match the settings of the RVL200.)
11. In the *Preshared Key* field, enter a string for this key, for example, 13572468.



RV082 IPSec Setup Settings

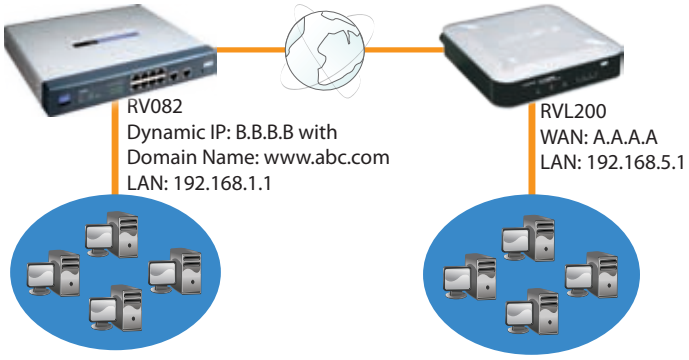
12. If you need more detailed settings, click **Advanced Settings**. Otherwise, click **Save Settings**.

Configuration of PC 1 and PC 2

Verify that PC 1 and PC 2 can ping each other (refer to Windows Help for more information). If the computers can ping each other, then you know the VPN tunnel is configured correctly.

Configuration when the Remote Gateway Uses a Dynamic IP Address

This example assumes the Remote Gateway is using a dynamic IP address. If the Remote Gateway uses a static IP address, refer to "Configuration when the Remote Gateway Uses a Static IP Address."



Gateway-to-Gateway IPSec VPN Tunnel - Remote Gateway Using Dynamic IP

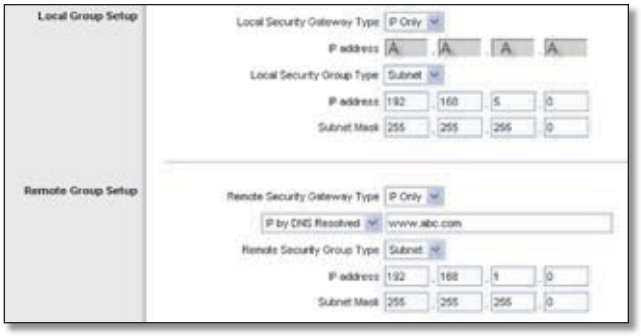
NOTE: Each computer must have a network adapter installed.

Configuration of the RVL200

Follow these instructions for the first VPN Router, designated RVL200. The other VPN Router is designated the RV082.

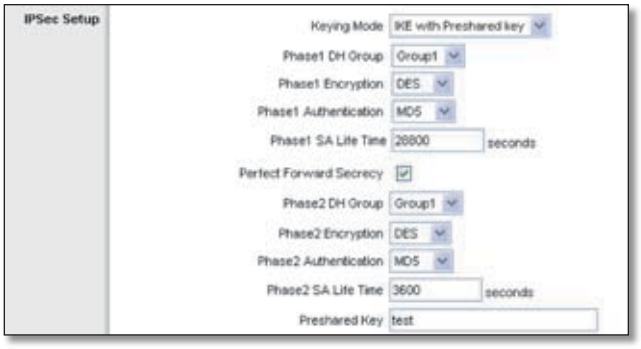
1. Launch the web browser for a networked computer, designated PC 1.
2. Access the web-based utility of the RVL200. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **IPSec VPN** tab.
4. Click the **Gateway to Gateway** tab.
5. Enter a name in the *Tunnel Name* field.
6. For the VPN Tunnel setting, select **Enable**.
7. The WAN IP address (A.A.A.A) of the RVL200 will be automatically detected.

   For the Local Security Group Type, select **Subnet**. Enter the RVL200's local network settings in the *IP Address* and *Subnet Mask* fields.



RVL200 IPSec VPN Settings

8. For the Remote Security Gateway Type, select **IP by DNS Resolved**. Enter the RV082's domain name in the field provided.
9. For the Remote Security Group Type, select **Subnet**. Enter the RV082's local network settings in the *IP Address* and *Subnet Mask* fields.
10. In the IPSec Setup section, select the appropriate encryption, authentication, and other key management settings.
11. In the *Preshared Key* field, enter a string for this key, for example, 13572468.



RVL200 IPSec Setup Settings

12. If you need more detailed settings, click **Advanced Settings**. Otherwise, click **Save Settings** and proceed to the next section, "Configuration of the RV082."

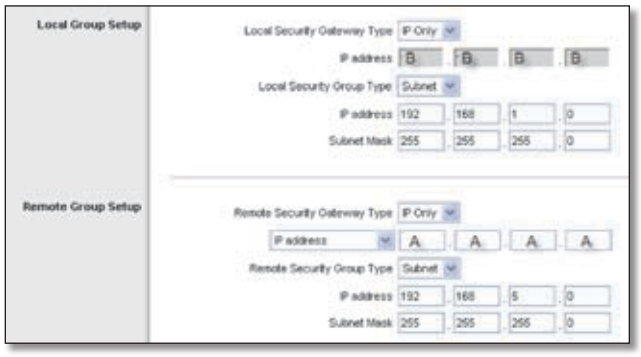
Configuration of the RV082

Follow similar instructions for the RV082.

1. Launch the web browser for a networked computer, designated PC 2.
2. Access the Web-based Utility of the RV082. (Refer to the User Guide of the RV082 for details.)
3. Click the **IPSec VPN** tab.
4. Click the **Gateway to Gateway** tab.
5. Enter a name in the *Tunnel Name* field.
6. For the VPN Tunnel setting, select **Enable**.

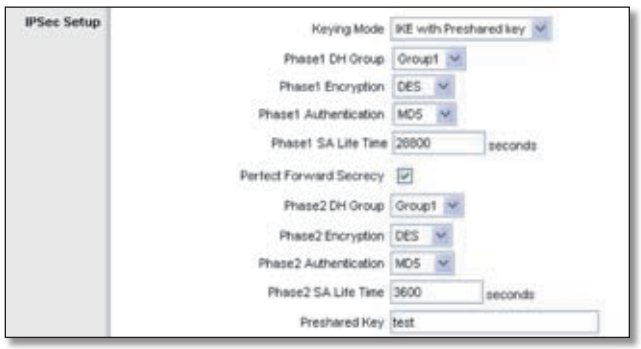
7. The WAN IP address (B.B.B.B) of the RV082 will be automatically detected.

   For the Local Security Group Type, select **Subnet**. Enter the RV082's local network settings in the *IP Address* and *Subnet Mask* fields.



RV082 VPN Settings

8. For the Remote Security Gateway Type, select **IP address**. Enter the RVL200's WAN IP address in the *IP Address* field.
9. For the Remote Security Group Type, select **Subnet**. Enter the RVL200's local network settings in the *IP Address* and *Subnet Mask* fields.
10. In the IPSec Setup section, select the appropriate encryption, authentication, and other key management settings. (These should match the settings of the RVL200.)
11. In the *Preshared Key* field, enter a string for this key, for example, 13572468.



RV082 IPSec Setup Settings

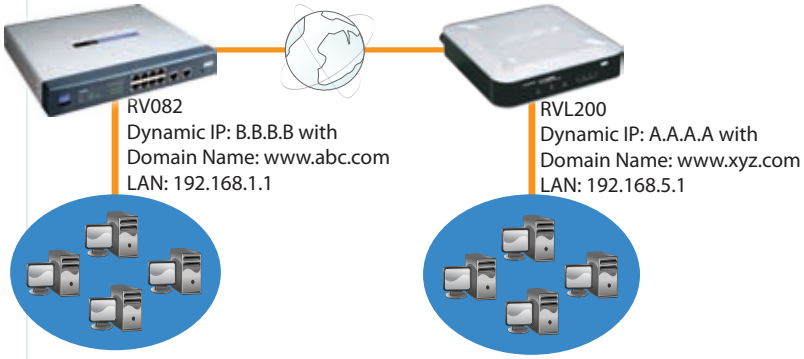
12. If you need more detailed settings, click **Advanced Settings**. Otherwise, click **Save Settings**.

Configuration of PC 1 and PC 2

Verify that PC 1 and PC 2 can ping each other (refer to Windows Help for more information). If the computers can ping each other, then you know the VPN tunnel is configured correctly.

Configuration when Both Gateways Use Dynamic IP Addresses

This example assumes both Gateways are using dynamic IP addresses. If the Remote Gateway uses a static IP address, refer to "Configuration when the Remote Gateway Uses a Static IP Address." If only the Remote Gateway uses a dynamic IP address, refer to "Configuration when the Remote Gateway Uses a Dynamic IP Address."



Gateway-to-Gateway IPSec VPN Tunnel - Both Gateways Using Dynamic IP

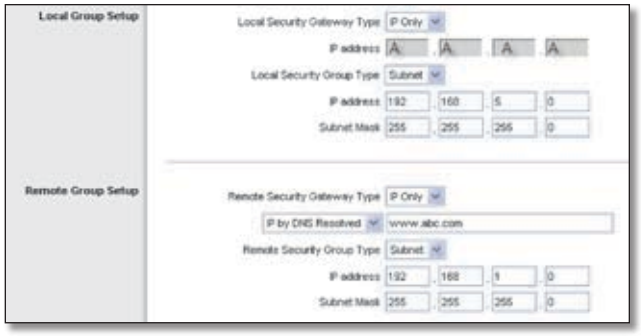
NOTE: Each computer must have a network adapter installed.

Configuration of the RVL200

Follow these instructions for the first VPN Router, designated RVL200. The other VPN Router is designated the RV082.

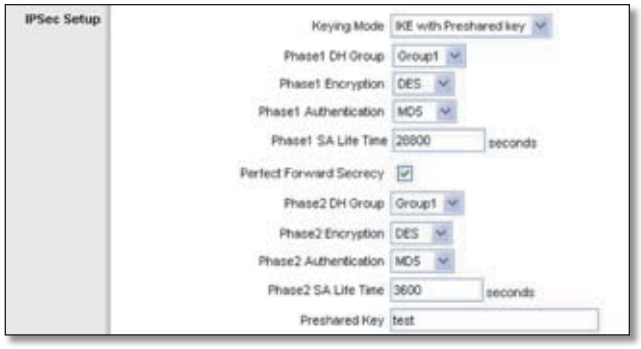
1. Launch the web browser for a networked computer, designated PC 1.
2. Access the web-based utility of the RVL200. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **IPSec VPN** tab.
4. Click the **Gateway to Gateway** tab.
5. Enter a name in the *Tunnel Name* field.
6. For the VPN Tunnel setting, select **Enable**.
7. The WAN IP address (A.A.A.A) of the RVL200 will be automatically detected.

   For the Local Security Group Type, select **Subnet**. Enter the RVL200's local network settings in the *IP Address* and *Subnet Mask* fields.



RVL200 IPSec VPN Settings

8. For the Remote Security Gateway Type, select **IP by DNS Resolved**. Enter the RV082's domain name in the field provided.
9. For the Remote Security Group Type, select **Subnet**. Enter the RV082's local network settings in the *IP Address* and *Subnet Mask* fields.
10. In the IPSec Setup section, select the appropriate encryption, authentication, and other key management settings.
11. In the *Preshared Key* field, enter a string for this key, for example, 13572468.



RVL200 IPSec Setup Settings

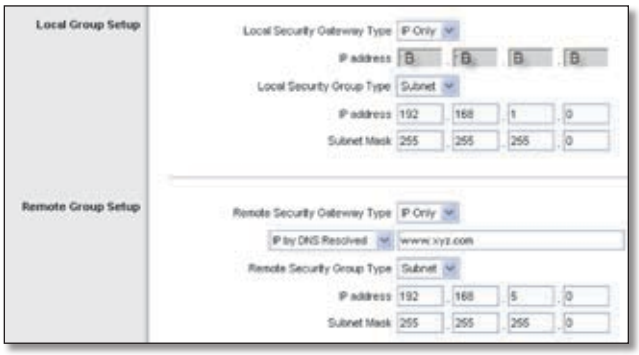
12. If you need more detailed settings, click **Advanced Settings**. Otherwise, click **Save Settings** and proceed to the next section, "Configuration of the RV082."

Configuration of the RV082

Follow similar instructions for the RV082.

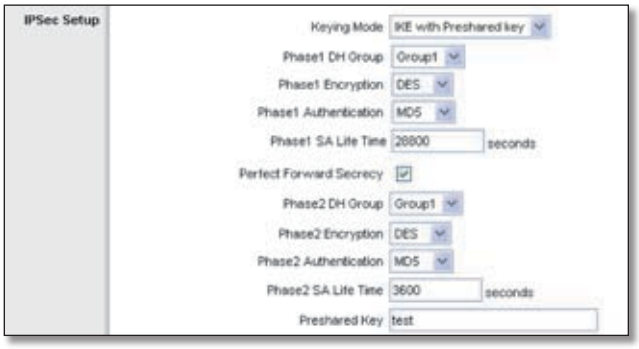
1. Launch the web browser for a networked computer, designated PC 2.
2. Access the Web-based Utility of the RV082. (Refer to the User Guide of the RV082 for details.)
3. Click the **IPSec VPN** tab.
4. Click the **Gateway to Gateway** tab.
5. Enter a name in the *Tunnel Name* field.
6. For the VPN Tunnel setting, select **Enable**.
7. The WAN IP address (B.B.B.B) of the RV082 will be automatically detected.

   For the Local Security Group Type, select **Subnet**. Enter the RV082's local network settings in the *IP Address* and *Subnet Mask* fields.



RV082 VPN Settings

8. For the Remote Security Gateway Type, select **IP by DNS Resolved**. Enter the RVL200's domain name in the field provided.
9. For the Remote Security Group Type, select **Subnet**. Enter the RVL200's local network settings in the *IP Address* and *Subnet Mask* fields.
10. In the IPSec Setup section, select the appropriate encryption, authentication, and other key management settings. (These should match the settings of the RVL200.)
11. In the *Preshared Key* field, enter a string for this key, for example, 13572468.



RV082 IPSec Setup Settings

12. If you need more detailed settings, click **Advanced Settings**. Otherwise, click **Save Settings**.

Configuration of PC 1 and PC 2

Verify that PC 1 and PC 2 can ping each other (refer to Windows Help for more information). If the computers can ping each other, then you know the VPN tunnel is configured correctly.

Appendix J: IPSec NAT Traversal

Overview

Network Address Translation (NAT) traversal is a technique developed so that data protected by IPSec can pass through a NAT. (See NAT 1 and NAT 2 in the diagram.) Since IPSec provides integrity for the entire IP datagram, any changes to the IP addressing will invalidate the data. To resolve this issue, NAT traversal appends a new IP and UDP header to the incoming datagram, ensuring that no changes are made to the incoming datagram stream.

This chapter discusses two scenarios. In the first scenario, traffic is sent in one direction, through Router A, NAT 1, NAT 2, and Router B. In the second scenario, traffic is sent in the opposite direction, and a one-to-one NAT rule is required.

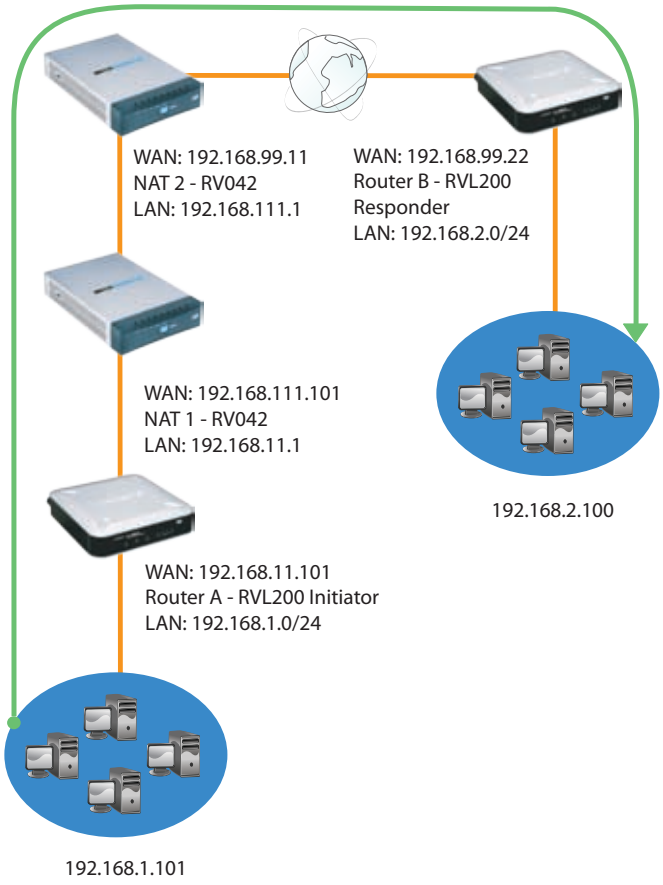
Before You Begin

The following is a list of equipment you need:

- Two 4-Port SSL/IPSec VPN Routers (model number: RVL200), one of which is connected to the Internet
- Two 10/100 4-Port VPN Routers (model number: RV042), one of which is connected to the Internet

Configuration of Scenario 1

In this scenario, Router A is the RVL200 Initiator, while Router B is the RVL200 Responder.



Traffic in Scenario 1

NOTE: Both the IPSec initiator and responder must support the mechanism for detecting the NAT router in the path and changing to a new port, as defined in RFC 3947.

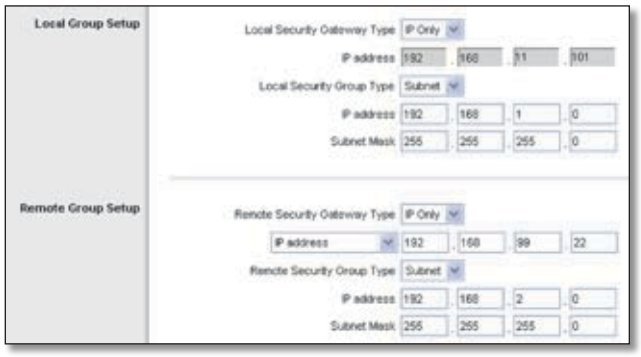
Configuration of Router A

Follow these instructions for Router A.

1. Launch the web browser for a networked computer, designated PC 1.
2. Access the web-based utility of Router A. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **IPSec VPN** tab.
4. Click the **Gateway to Gateway** tab.
5. Enter a name in the *Tunnel Name* field.
6. For the VPN Tunnel setting, select **Enable**.

7. The WAN IP address of Router A will be automatically detected.

   For the Local Security Group Type, select **Subnet**. Enter Router A's local network settings in the *IP Address* and *Subnet Mask* fields.


Local Group Setup
Local Security Gateway Type IP Only
IP address 192 168 11 101
Local Security Group Type Subnet
IP address 192 168 1 0
Subnet Mask 255 255 255 0
Remote Group Setup
Remote Security Gateway Type IP Only
IP address 192 168 99 22
Remote Security Group Type Subnet
IP address 192 168 2 0
Subnet Mask 255 255 255 0

Router A's IPSec VPN Settings

8. For the Remote Security Gateway Type, select **IP address**. Enter Router B's WAN IP address in the *IP Address* field.
9. For the Remote Security Group Type, select **Subnet**. Enter Router B's local network settings in the *IP Address* and *Subnet Mask* fields.
10. In the IPSec Setup section, select the appropriate encryption, authentication, and other key management settings.
11. In the *Preshared Key* field, enter a string for this key, for example, 13572468.
12. If you need more detailed settings, click **Advanced Settings**. Otherwise, click Save Settings and proceed to the next section, "Configuration of Router B."

Configuration of Router B

Follow these instructions for Router B.

1. Launch the web browser for a networked computer, designated PC 2.
2. Access the web-based utility of the Router B. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **IPSec VPN** tab.
4. Click the **Gateway to Gateway** tab.
5. Enter a name in the *Tunnel Name* field.
6. For the VPN Tunnel setting, select **Enable**.
7. The WAN IP address of Router B will be automatically detected.

   For the Local Security Group Type, select **Subnet**. Enter Router B's local network settings in the *IP Address* and *Subnet Mask* fields.

Local Group Setup
Local Security Gateway Type IP Only
IP address 192 168 99 22
Local Security Group Type Subnet
IP address 192 168 2 0
Subnet Mask 255 255 255 0
Remote Group Setup
Remote Security Gateway Type IP Only
IP address 192 168 99 11
Remote Security Group Type Subnet
IP address 192 168 1 0
Subnet Mask 255 255 255 0

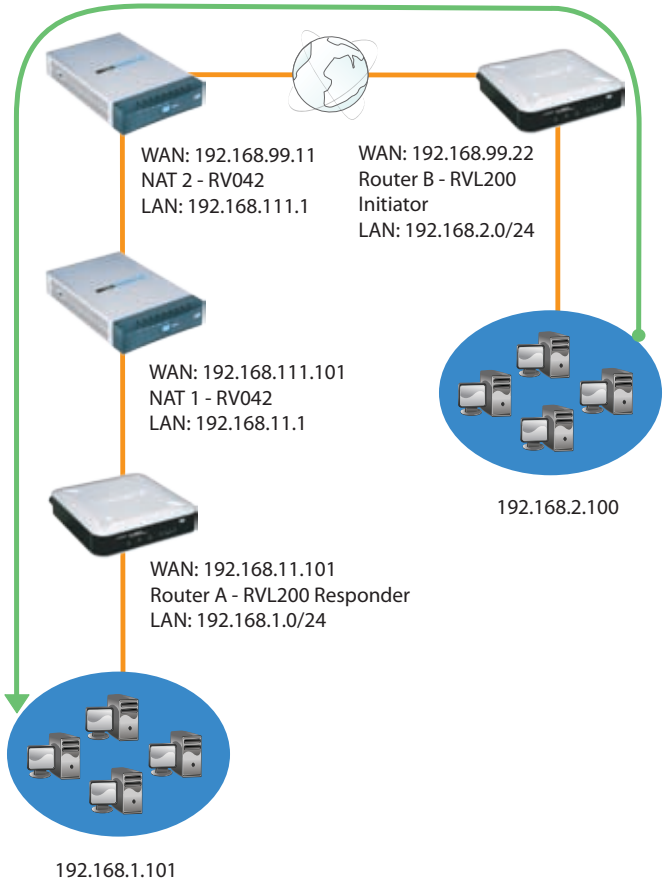
Router B's IPSec VPN Settings

8. For the Remote Security Gateway Type, select **IP Only**. Enter the WAN IP address of NAT 2 - RV042 in the *IP Address* field.
9. For the Remote Security Group Type, select **Subnet**. Enter Router A's local network settings in the *IP Address* and *Subnet Mask* fields.
10. In the IPSec Setup section, select the appropriate encryption, authentication, and other key management settings.
11. In the *Preshared Key* field, enter a string for this key, for example, 13572468.
12. If you need more detailed settings, click **Advanced Settings**. Otherwise, click **Save Settings**.

Configuration of Scenario 2

In this scenario, Router B is the RVL200 Initiator, while Router A is the RVL200 Responder. Router B will have the Remote Security Gateway IP address set to a public IP address that is associated with the WAN IP address of Router A, which is behind the NAT. Hence the public IP address (192.168.99.1) must be mapped to the WAN IP address (192.168.11.101, a private IP address) of Router A through the two one-to-one NAT rules:

- 192.168.99.1 => 192.168.111.11 (on NAT 2)
- 192.168.111.11 => 192.168.11.101 (on NAT 1)



Traffic in Scenario 2

NOTE: Both the IPSec initiator and responder must support the mechanism for detecting the NAT router in the path and changing to a new port, as defined in RFC 3947.

Configuration of the One-to-One NAT Rules

The one-to-one NAT rules must be configured on NAT 2 - RV042 and NAT 1 - RVO42.

One-to-One NAT Rule on NAT 2 - RV042

192.168.99.1 => 192.168.111.11

Refer to the documentation of the 10/100 4-Port VPN Router (model number: RV042) for more details about one-to-one NAT rules.

One-to-One NAT Rule on NAT 1 - RV042

192.168.111.11 => 192.168.11.101

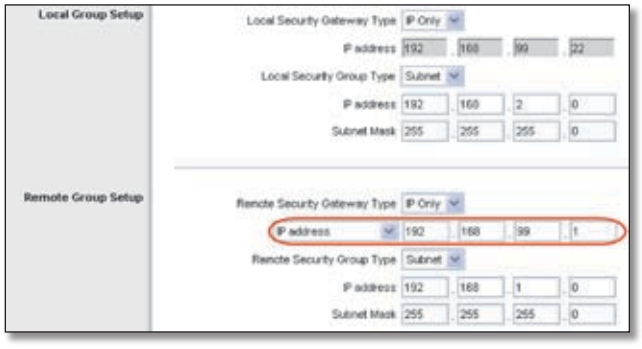
Configuration of Router B

Set the Remote Security Gateway to IP address: 192.168.99.1, which is the one-to-one NAT IP address used by NAT 2 - RV042.

Follow these instructions for Router B.

1. Launch the web browser for a networked computer, designated PC 2.
2. Access the web-based utility of the Router B. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **IPSec VPN** tab.
4. Click the **Gateway to Gateway** tab.
5. Enter a name in the *Tunnel Name* field.
6. For the VPN Tunnel setting, select **Enable**.
7. The WAN IP address of the Router B will be automatically detected.

   For the Local Security Group Type, select **Subnet**. Enter Router B's local network settings in the *IP Address* and *Subnet Mask* fields.
8. For the Remote Security Gateway Type, select **IP address**. Enter **192.168.99.1** in the *IP Address* field.



Router B's IPSec VPN Settings

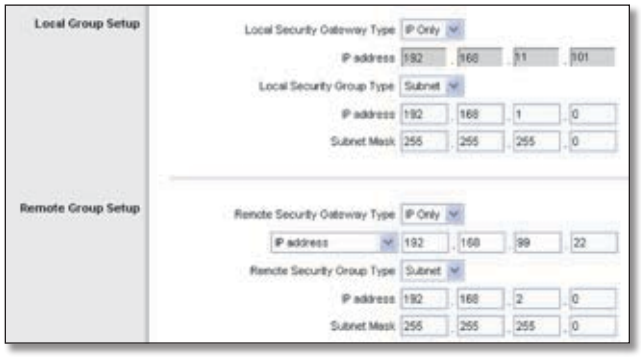
9. For the Remote Security Group Type, select **Subnet**. Enter Router A's local network settings in the *IP Address* and *Subnet Mask* fields.
10. In the IPSec Setup section, select the appropriate encryption, authentication, and other key management settings.
11. In the *Preshared Key* field, enter a string for this key, for example, 13572468.
12. If you need more detailed settings, click **Advanced Settings**. Otherwise, click **Save Settings** and proceed to the next section, "Configuration of Router A."

Configuration of Router A

Follow these instructions for Router A.

1. Launch the web browser for a networked computer, designated PC 1.
2. Access the web-based utility of Router A. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **IPSec VPN** tab.
4. Click the **Gateway to Gateway** tab.
5. Enter a name in the *Tunnel Name* field.
6. For the VPN Tunnel setting, select **Enable**.
7. The WAN IP address of Router A will be automatically detected.

   For the Local Security Group Type, select **Subnet**. Enter Router A's local network settings in the *IP Address* and *Subnet Mask* fields.



Router A's IPSec VPN Settings

NOTE: This configuration is the same as the configuration of Router A in scenario 1.

8. For the Remote Security Gateway Type, select **IP address**. Enter Router B's WAN IP address in the *IP Address* field.
9. For the Remote Security Group Type, select **Subnet**. Enter Router B's local network settings in the *IP Address* and *Subnet Mask* fields.
10. In the IPSec Setup section, select the appropriate encryption, authentication, and other key management settings.
11. In the *Preshared Key* field, enter a string for this key, for example, 13572468.
12. If you need more detailed settings, click **Advanced Settings**. Otherwise, click **Save Settings**.

Appendix K: Configuration of Multiple Subnets

Overview

The 4-Port SSL/IPSec VPN Router (model number: RVL200) can support multiple subnets. The configuration example shows an RVL200 deploying two routers.

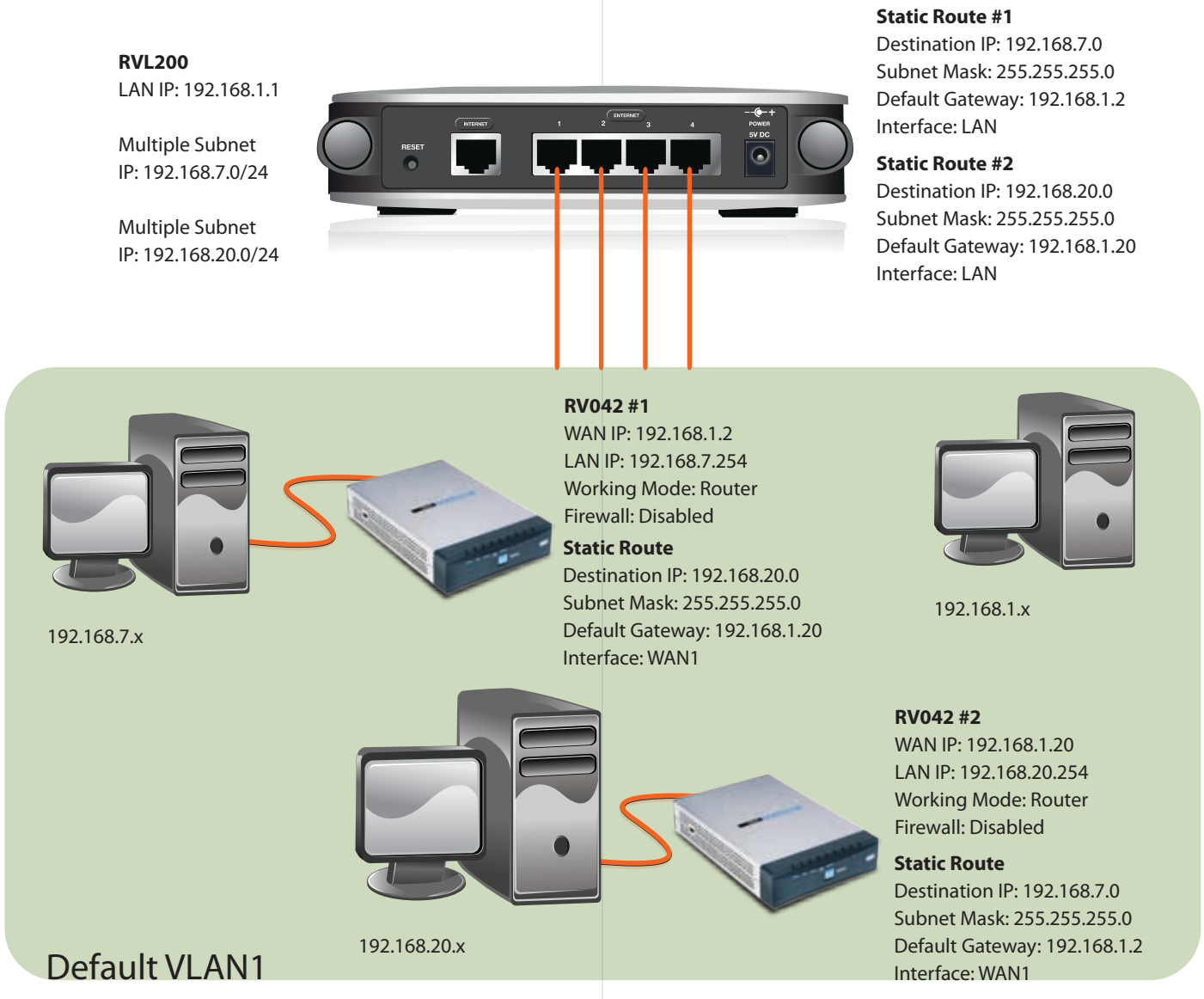
Any router can be deployed; however, this example uses the Linksys 10/100 4-Port VPN Router (model number: RV042).

RVL200-to-RV042 Configuration

To create this configuration, you create two subnets and two static routes on the RVL200. Then on each RV042, you set it to Router mode, disable the firewall, and set up a static route.

RVL200 Configuration

1. Physically connect a numbered port (Ethernet 1-4) on the RVL200 to the WAN 1 port of the RV042.
2. Access the web-based utility of the RVL200. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **Setup** tab.



RVL200 with Multiple Subnets

Setup > Network

4. In the LAN Setting section, select **Multiple Subnet**.
5. Click **Add/Edit**. A new screen appears.

Create a Subnet

6. In the *LAN IP Address* field, enter **192.168.7.0**.
7. In the *Subnet Mask* field, enter **255.255.255.0**.
8. To create the first subnet, click **Add to list**.
9. In the *LAN IP Address* field, enter **192.168.20.0**.
10. In the *Subnet Mask* field, enter **255.255.255.0**.
11. To create the second subnet, click **Add to list**.
12. Click **Save Setting**.
13. Click **Exit**.
14. On the *Network* screen, click **Save Settings**.
15. Click the **More** tab.
16. Click the **Advanced Routing** tab.

Setup > Advanced Routing

17. In the Static Routing section, enter **192.168.7.0** in the *Destination IP* field.
18. Enter **255.255.255.0** in the *Subnet Mask* field.
19. Enter **192.168.1.2** in the *Default Gateway* field.
20. Enter **1** in the *Hop Count* field.
21. Select **LAN** from the *Interface* drop-down menu.
22. To create the first static route, click **Add to list**.
23. In the **Static Routing** section, enter **192.168.20.0** in the *Destination IP* field.
24. Enter **255.255.255.0** in the *Subnet Mask* field.
25. Enter **192.168.1.20** in the *Default Gateway* field.
26. Enter **1** in the *Hop Count* field.
27. Select **LAN** from the *Interface* drop-down menu.
28. To create the second static route, click **Add to list**.
29. Click **Save Settings**.

RV042 #1 Configuration

1. Launch the web browser for a computer connected one of the Ethernet ports of the RV042 #1.
2. Access the web-based utility of the RV042 #1. (Refer to the User Guide of the RV042 for details.)
3. Click the **Setup** tab.
4. Click the **More** tab.
5. Click the **Advanced Routing** tab.
6. For the Working Mode setting, select **Router**.
7. In the **Static Routing** section, enter **192.168.7.0** in the *Destination IP* field.
8. Enter **255.255.255.0** in the *Subnet Mask* field.

9. Enter **192.168.1.2** in the *Default Gateway* field.
10. Enter **1** in the *Hop Count* field.
11. Select **WAN1** from the *Interface* drop-down menu.
12. To create the static route, click **Add to list**.
13. Click **Save Settings**.
14. Click the **Firewall** tab.
15. For the Firewall setting, select **Disable**.
16. Click **Save Settings**.

RV042 #2 Configuration

1. Launch the web browser for a computer connected one of the Ethernet ports of the RV042 #2.
2. Access the web-based utility of the RV042 #2. (Refer to the User Guide of the RV042 for details.)
3. Click the **Setup** tab.
4. Click the **More** tab.
5. Click the **Advanced Routing** tab.
6. For the Working Mode setting, select **Router**.
7. In the **Static Routing** section, enter **192.168.20.0** in the *Destination IP* field.
8. Enter **255.255.255.0** in the *Subnet Mask* field.
9. Enter **192.168.1.20** in the *Default Gateway* field.
10. Enter **1** in the *Hop Count* field.
11. Select **WAN1** from the *Interface* drop-down menu.
12. To create the static route, click **Add to list**.
13. Click **Save Settings**.
14. Click the **Firewall** tab.
15. For the Firewall setting, select **Disable**.
16. Click **Save Settings**.

Appendix L: Multiple VLANs with Computers

Overview

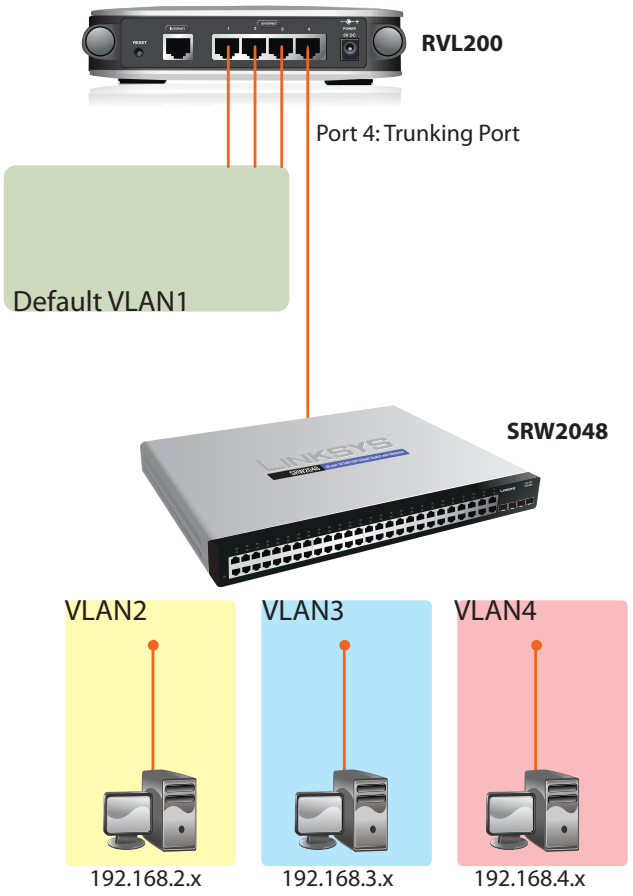
The 4-Port SSL/IPSec VPN Router (model number: RVL200) can support multiple Virtual Local Area Networks (VLANs). The configuration example shows the Router deploying a Layer 2 managed switch, which deploys three VLANs.

This example uses the Linksys 48-Port 10/100/1000 + 4-Port miniGBIC Switch with WebView (model number: SRW2048); however, any of the Linksys SRW switches with 802.1Q VLAN support can also be used.

RVL200-to-SRW2048 Configuration

By default, Ethernet ports 1-4 of the RVL200 are set to the default, **VLAN1**, when the option, Enable VLAN, is selected on the *Port Management* > *Create VLAN* screen.

On the RVL200, configure VLANs 2, 3, and 4. Set Ethernet port 4 to Trunk mode, and assign VLANs 2, 3, and 4 to Ethernet port 4. On the SRW2048, configure VLANs 2, 3, and 4, and then assign ports to the VLANs.



RVL200 with Multiple VLANs Using Computers

RVL200 Configuration

1. Physically connect Ethernet port 4 on the RVL200 to a trunking port on the SRW2048.
2. Access the web-based utility of the RVL200. (Refer to "Chapter 4: Advanced Configuration" for details.)
3. Click the **Port Management** tab.
4. Click the **Create VLAN** tab.

Port Management > Create VLAN

5. Select **Enable VLAN**.
6. Enter **2** in the *VLAN ID* field.
7. To create VLAN2, click **Add VLAN**.
8. Enter **3** in the *VLAN ID* field.
9. To create VLAN3, click **Add VLAN**.
10. Enter **4** in the *VLAN ID* field.
11. To create VLAN4, click **Add VLAN**.
12. Click the **Port Setting** tab.

Port Management > Port Setting

13. For Port ID 4, select **Trunk** as the Mode.
14. Click **Save Settings**.
15. Click the **VLAN Membership** tab.

Port Management > VLAN Membership

16. Select **2** from the VLAN ID drop-down menu.
17. Enter a description in the *Description* field.
18. Select **Tagged** in the Port 4 column.
19. Select **3** from the VLAN ID drop-down menu.
20. Enter a description in the *Description* field.
21. Select **Tagged** in the Port 4 column.
22. Select **4** from the VLAN ID drop-down menu.
23. Enter a description in the *Description* field.
24. Select **Tagged** in the Port 4 column.
25. Click **Save Settings**.

NOTE: All VLANs will be part of the default subnet of the Router. If you want to use multiple subnets with your VLANs, refer to "Appendix M: Multiple VLANs and Subnets".

SRW2048 Configuration

To configure VLANs 2, 3, and 4, refer to the documentation for the SRW2048.

Appendix M: Multiple VLANs and Subnets

Overview

The 4-Port SSL/IPSec VPN Router (model number: RVL200) can support multiple Virtual Local Area Networks (VLANs) used with multiple subnets. The configuration example shows an RVL200 deploying two routers and one Layer 2 managed switch, which deploys three VLANs.

Any router can be deployed; however, this example uses the Linksys 10/100 4-Port VPN Router (model number: RV042).

This example also uses the Linksys 48-Port 10/100/1000 + 4-Port miniGBIC Switch with WebView (model number: SRW2048); however, any of the Linksys SRW switches with 802.1Q VLAN support can also be used.

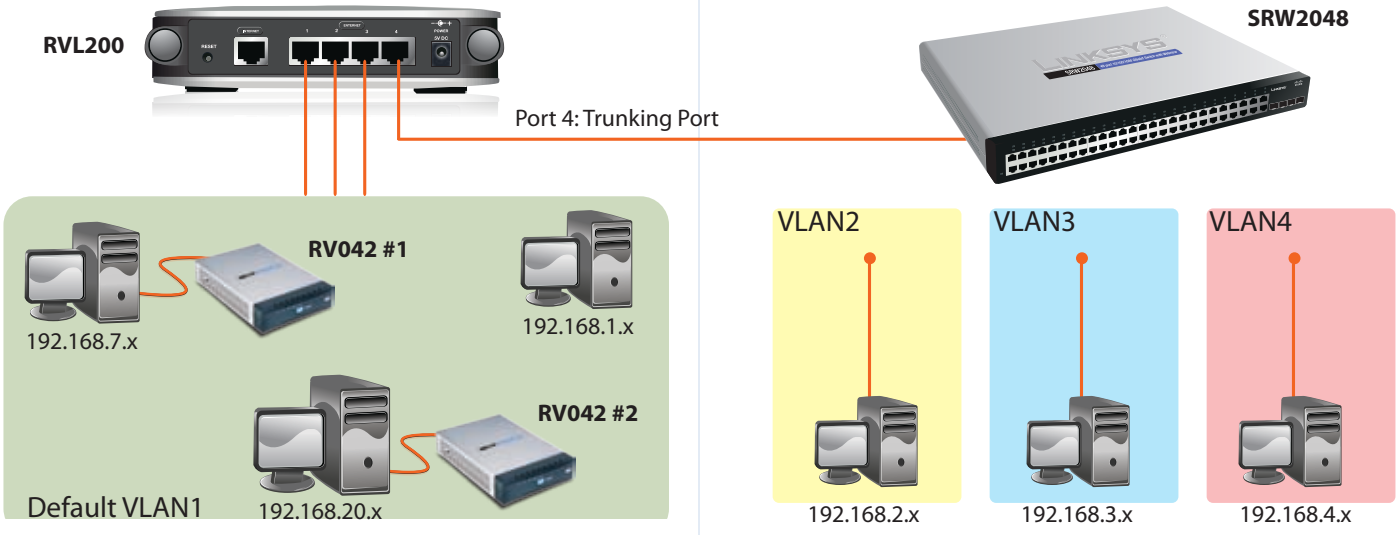
RVL200 Configuration

Basic Instructions

1. To configure the multiple subnets , refer to "Appendix K: Configuration of Multiple Subnets".
2. To configure the multiple VLANs, refer to "Appendix L: Multiple VLANs with Computers".
3. Access the web-based utility of the RVL200. (Refer to "Chapter 4: Advanced Configuration" for details.)
4. Click the **DHCP** tab.
5. Click the **Multiple VLANs** tab.

DHCP > Multiple VLANs

6. Select **Enable Multiple VLANs**.
7. VLAN1 is configured by default. For VLAN2, complete the following:
   - **IP Address** Enter **192.168.2.1**. (This is the default, which you can overwrite.)



RVL200 with Multiple VLANs and Subnets

- **Subnet Mask** Select **255.255.255.0**.
- **Range Start** Enter **100**.
- **Range End** Enter **149**.

8. For VLAN3, complete the following:
   - **IP Address** Enter **192.168.3.1**. (This is the default, which you can overwrite.)
   - **Subnet Mask** Select **255.255.255.0**.
   - **Range Start** Enter **100**.
   - **Range End** Enter **149**.
9. For VLAN4, complete the following:
   - **IP Address** Enter **192.168.4.1**. (This is the default, which you can overwrite.)
   - **Subnet Mask** Select **255.255.255.0**.
   - **Range Start** Enter **100**.
   - **Range End** Enter **149**.
10. Click **Save Settings**.

Inter-VLAN Routing Option

To allow packets to travel from one VLAN to another, follow these instructions (optional):

1. Access the web-based utility of the RVL200. (Refer to "Chapter 4: Advanced Configuration" for details.)
2. Click the **DHCP** tab.
3. Click the **Inter-VLAN Routing** tab.
4. Select the VLANs that can route packets to each other: **VLAN1**, **VLAN2**, **VLAN3**, and/or **VLAN4**.

DHCP > Inter-VLAN Routing

5. Click **Save Settings**.

Appendix N: Access of Multiple VLANs over a SSL VPN Tunnel

Overview

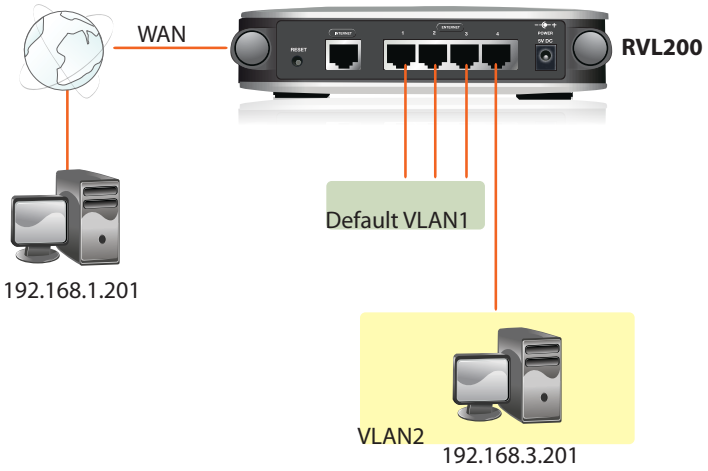
The 4-Port SSL/IPSec VPN Router (model number: RVL200) can allow a computer on the Internet to communicate with a local computer, even though they belong to different Virtual Local Area Networks (VLANs).

SSL VPN Connection

Establish an SSL VPN connection between the computer on the Internet, designated PC 1, and the RVL200. (Refer to "Appendix B: Virtual Passage SSL VPN Client" for details.)

In the configuration example, the RVL200 assigns 192.168.1.201 to PC 1.

NOTE: By default, the SSL VPN client is a member of default VLAN1.



SSL VPN Client Communicating with a Client Belonging to a Different VLAN

Static Route

On the local computer, designated PC 2, configure a static route to access a member of a different VLAN.

Follow the instructions for the operating system of PC 2.

Windows Operating System (OS)

1. Click **Start**.
2. Select **Programs > Accessories > Command Prompt**.
3. At the cmd prompt, enter the following:

   route add <destination ip> mask 255.255.255.0 <gateway ip>

   Example:

   route add 192.168.3.0 mask 255.255.255.0 192.168.1.201
4. Press the **Enter** key.

Mac OS X

1. Click **Finder**.
2. Select **Applications > Utilities > Terminal**.
3. Enter one of the following:

   sudo route add -net <destination ip> <gateway ip> <subnet mask>

   Example #1:

   sudo route add -net 192.168.3.0 192.168.1.201 255.255.255.0

   or

   sudo route add -net <destination network> <gateway ip>

   Example #2:

   sudo route add -net 192.168.3.0/24 192.168.1.201
4. Press the **Enter** key.

Linux OS

Enter the following:

route add -net <destination ip> netmask 255.255.255.0 gw <gateway ip>

Example:

route add -net 192.168.3.0 netmask 255.255.255.0 gw 192.168.1.201

Appendix O: Firmware Upgrade

Overview

This appendix explains how to upgrade the firmware of the Router.

Before You Begin

If you are using Internet Explorer on Windows XP, disable the pop-up blocking function before you upgrade the Router's firmware. (This avoids a firmware upgrade failure.)

NOTE: Internet Explorer on Windows 2000 and other operating systems do not have this issue.

Internet Explorer 6.0 or Higher

1. Open **Internet Explorer**.
2. Click **Tools**.
3. Click **Internet Options**.

Internet Explorer > Tools

4. Click the **Privacy** tab.

Internet Explorer > Tools > Tools

5. Deselect (remove the checkmark from) **Block pop-ups**.

Internet Explorer > Tools > Internet Options > Privacy

6. Click **OK**.

How to Access the Web-Based Utility

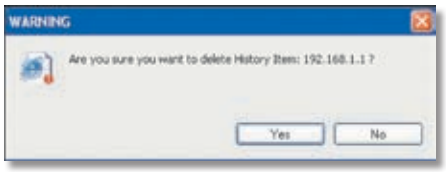
1. For local access of the Router's web-based utility, launch your web browser, and enter the Router's default IP address, **192.168.1.1**, in the *Address* field. Press the **Enter** key.

Address Bar

2. A login screen prompts you for your User Name and Password. Enter **admin** in the *User Name* field, and enter **admin** in the *Password* field. (You can change the Password on the *Setup* > *Password* screen.) Then click **Login**.

Login Screen

When you or another user logs out, a *Warning* screen will appear. It will ask you to confirm that you want to delete the History Item for the Router. Click **Yes**.



Click Yes to Delete History

Upgrade the Firmware

1. In the Router's web-based utility, click the **System Management** tab.
2. Click the **Firmware Upgrade** tab.
3. In the Firmware Download section, click **Firmware Download from Linksys Web Site**.

System Management > Firmware Upgrade

4. The Support page of the Linksys website appears. Select **4-Port SSL/IPSec VPN Router** from the drop-down menu, and choose the firmware from the available options.
5. After downloading the firmware file, extract it on your computer.
6. In the Firmware Upgrade instructions, click the **Browse** button to look for the file.
7. After you have selected the file, click **Firmware Upgrade Right Now**.

NOTE: The Router will take approximately ten minutes to upgrade its firmware. During this process, do not power off the Router or press the Reset button.

Appendix P: Battery Replacement

Overview

The Router has a lithium battery, type CR2032, on its main circuit board. This battery has an operating life of approximately 1 to 2 years. When the battery loses its charge, the Router cannot update its time setting unless it is connected to an NTP server.

WARNING: The lithium battery can explode if it is replaced incorrectly. The battery must be replaced with the same or equivalent type of CR2032 lithium battery.

Replace the Lithium Battery

NOTE: To replace the battery, the top case of the Router must be removed. Disassembling the Router will void its warranty; however, the battery's operating life is longer than the one-year warranty of the Router.

To replace the battery, follow these instructions:

1. Obtain a replacement CR2032 lithium battery.
2. Power off the Router.
3. Remove the four rubber feet from the bottom panel of the Router.
4. Remove the four screws that were located underneath the rubber feet.
5. Remove the top case of the Router.
6. Remove the old CR2032 lithium battery.
7. Insert a new CR2032 lithium battery or its equivalent type.
8. Replace the top case of the Router.
9. Replace the four screws on the bottom panel of the Router.
10. Replace the four rubber feet.

Appendix Q: Specifications

Specifications

Model	RVL200
Standards	IEEE 802.3, IEEE 802.3u, IEEE 802.1q, IEEE 802.1p, RFC791 (IP Protocol)
Ports	Ethernet, Power
Button	Reset
Cabling Type	UTP CAT 5
LEDs	Power, Diag, Internet, Ethernet 1-4
Operating System	Linux

Performance

NAT Throughput	Wirespeed - 100 Mbps
SSL Throughput	16.99 Mbps

Setup/Configuration

Web UI	Built-in Web UI for Easy Browser-Based Configuration (HTTP/HTTPS)

Management

SNMP Version	SNMP Version 1, 2c, 3
Event Logging	Event Logging: Local, Syslog, E-mail
Web F/W Upgrade	Firmware Upgradeable through Web Browser, and TFTP Utility
Diags: Flash, etc.	Diags: Flash, RAM
Port Mirroring	One of the 5 WAN/LAN Ports can be Mirrored to a Selected LAN Port

Security

Encryption	DES, 3DES, AES
Access Control	Access Rules based on IP and TCP/UDP Ports
Firewall	SPI (Stateful Packet Inspection) Firewall
Content Filtering	URL Blocking, Keyword Blocking
DoS	Denial of Service (DoS) Prevention (Ping of Death, SYN Flood, IP Spoofing)
Secure Management	HTTPS, Username/Password

QoS

	Layer 2 Prioritization Based on DSCP, 802.1p, or Physical Ports
	Bandwidth Management of WAN (Upstream and Downstream) based on Services (TCP/UDP Ports)

Network

VLAN Support	Supports 16 802.1Q VLANs
DHCP	DHCP Server, DHCP Client
DNS	Relay, Proxy, Dynamic DNS
NAT	PAT, NAPT, SIP ALG Support
DMZ	One PC in the LAN can be Configured as a DMZ Host
Static DHCP	DHCP Server Supports Static IP Address Based on MAC Address

VPN

	5 SSL Tunnels for Remote Client Access (Requires ActiveX-Enabled Browsers, e.g., IE and Netscape)
	1 IPSec Gateway-to-Gateway Tunnel for Branch Office Connectivity
	DES/3DES/AES Encryption
	MD5/SHA1 Authentication
	IPSec NAT-T
	VPN Passthrough of PPTP, L2TP, IPSec

Routing

	Static and RIP v1, v2

Environmental

Dimensions W x H x D	6.69" x 1.67" x 6.69" (170 x 42.5 x 170 mm)
Unit Weight	13.76 oz. (0.39 kg)
Power	5V, 2A
Certifications	FCC Class B, CE, ICES-003
Operating Temp.	0 to 40°C (32 to 104°F)
Storage Temp.	-20 to 70°C (-4 to 158°F)
Operating Humidity	10% to 85% Noncondensing
Storage Humidity	5% to 90% Noncondensing

Appendix R: Warranty Information

Limited Warranty

Linksys warrants to You that, for a period of one year (the "Warranty Period"), your Linksys Product will be substantially free of defects in materials and workmanship under normal use. Your exclusive remedy and Linksys' entire liability under this warranty will be for Linksys at its option to repair or replace the Product or refund Your purchase price less any rebates. This limited warranty extends only to the original purchaser.

If the Product proves defective during the Warranty Period call Linksys Technical Support in order to obtain a Return Authorization Number, if applicable. BE SURE TO HAVE YOUR PROOF OF PURCHASE ON HAND WHEN CALLING. If You are requested to return the Product, mark the Return Authorization Number clearly on the outside of the package and include a copy of your original proof of purchase. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE. You are responsible for shipping defective Products to Linksys. Linksys pays for UPS Ground shipping from Linksys back to You only. Customers located outside of the United States of America and Canada are responsible for all shipping and handling charges.

ALL IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE DURATION OF THE WARRANTY PERIOD. ALL OTHER EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF NON-INFRINGEMENT, ARE DISCLAIMED. Some jurisdictions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to You. This warranty gives You specific legal rights, and You may also have other rights which vary by jurisdiction.

This warranty does not apply if the Product (a) has been altered, except by Linksys, (b) has not been installed, operated, repaired, or maintained in accordance with instructions supplied by Linksys, or (c) has been subjected to abnormal physical or electrical stress, misuse, negligence, or accident. In addition, due to the continual development of new techniques for intruding upon and attacking networks, Linksys does not warrant that the Product will be free of vulnerability to intrusion or attack.

TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL LINKSYS BE LIABLE FOR ANY LOST DATA, REVENUE OR PROFIT, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, REGARDLESS OF THE THEORY OF LIABILITY (INCLUDING NEGLIGENCE), ARISING OUT OF OR RELATED TO THE USE OF OR INABILITY TO USE THE PRODUCT (INCLUDING ANY SOFTWARE), EVEN IF LINKSYS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT WILL LINKSYS' LIABILITY EXCEED THE AMOUNT PAID BY YOU FOR THE PRODUCT. The foregoing limitations will apply even if any warranty or remedy provided under this Agreement fails of its essential purpose. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to You.

Please direct all inquiries to: Linksys, P.O. Box 18558, Irvine, CA 92623.

Appendix S: Regulatory Information

FCC Statement

This product has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

Safety Notices

- Caution: To reduce the risk of fire, use only No.26 AWG or larger telecommunication line cord.
- Do not use this product near water, for example, in a wet basement or near a swimming pool.
- Avoid using this product during an electrical storm. There may be a remote risk of electric shock from lightning.

WARNING: This product contains lead, known to the State of California to cause cancer, and birth defects or other reproductive harm. Wash hands after handling.

Industry Canada Statement

This device complies with Industry Canada ICES-003 rule.

Operation is subject to the following two conditions:

1. This device may not cause interference and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Avis d'Industrie Canada

Cet appareil est conforme à la norme NMB003 d'Industrie Canada.

Le fonctionnement est soumis aux conditions suivantes :

1. Ce périphérique ne doit pas causer d'interférences;
2. Ce périphérique doit accepter toutes les interférences reçues, y compris celles qui risquent d'entraîner un fonctionnement indésirable.

User Information for Consumer Products Covered by EU Directive 2002/96/EC on Waste Electric and Electronic Equipment (WEEE)

This document contains important information for users with regards to the proper disposal and recycling of Linksys products. Consumers are required to comply with this notice for all electronic products bearing the following symbol:

English - Environmental Information for Customers in the European Union

European Directive 2002/96/EC requires that the equipment bearing this symbol on the product and/or its packaging must not be disposed of with unsorted municipal waste. The symbol indicates that this product should be disposed of separately from regular household waste streams. It is your responsibility to dispose of this and other electric and electronic equipment via designated collection facilities appointed by the government or local authorities. Correct disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about the disposal of your old equipment, please contact your local authorities, waste disposal service, or the shop where you purchased the product.

Български (Bulgarian) - Информация относно опазването на околната среда за потребители в Европейския съюз

Европейска директива 2002/96/ЕС изисква уредите, носещи този символ върху изделието и/или опаковката му, да не се изхвърля т с несортирани битови отпадъци. Символът обозначава, че изделието трябва да се изхвърля отделно от сметосъбирането на обикновените битови отпадъци. Ваша е отговорността този и другите електрически и електронни уреди да се изхвърлят в предварително определени от държавните или общински органи специализирани пунктове за събиране. Правилното изхвърляне и рециклиране ще спомогнат да се предотвратят евентуални вредни за околната среда и здравето на населението последствия. За по-подробна информация относно изхвърлянето на вашите стари уреди се обърнете към местните власти, службите за сметосъбиране или магазина, от който сте закупили уреда.

Ceština (Czech) - Informace o ochraně životního prostředí pro zákazníky v zemích Evropské unie

Evropská směrnice 2002/96/ES zakazuje, aby zařízení označené tímto symbolem na produktu anebo na obalu bylo likvidováno s netříděným komunálním odpadem. Tento symbol udává, že daný produkt musí být likvidován odděleně od běžného komunálního odpadu. Odpovídáte za likvidaci tohoto produktu a dalších elektrických a elektronických zařízení prostřednictvím určených sběrných míst stanovených vládou nebo místními úřady. Správná likvidace a recyklace pomáhá předcházet potenciálním negativním dopadům na životní prostředí a lidské zdraví. Podrobnější informace o likvidaci starého vybavení si laskavě vyžádejte od místních úřadů, podniku zabývajícího se likvidací komunálních odpadů nebo obchodu, kde jste produkt zakoupili.

Dansk (Danish) - Miljøinformation for kunder i EU

EU-direktiv 2002/96/EF kræver, at udstyr der bærer dette symbol på produktet og/eller emballagen ikke må bortskaffes som usorteret kommunalt affald. Symbolet betyder, at dette produkt skal bortskaffes adskilt fra det almindelige husholdningsaffald. Det er dit ansvar at bortskaffe dette og andet elektrisk og elektronisk udstyr via bestemte indsamlingssteder udpeget af staten eller de lokale myndigheder. Korrekt bortskaffelse og genvinding vil hjælpe med til at undgå mulige skader for miljøet og menneskers sundhed. Kontakt venligst de lokale myndigheder, renovationstjenesten eller den butik, hvor du har købt produktet, angående mere detaljeret information om bortskaffelse af dit gamle udstyr.

Deutsch (German) - Umweltinformation für Kunden innerhalb der Europäischen Union

Die Europäische Richtlinie 2002/96/EC verlangt, dass technische Ausrüstung, die direkt am Gerät und/oder an der Verpackung mit diesem Symbol versehen ist, nicht zusammen mit unsortiertem Gemeindeabfall entsorgt werden darf. Das Symbol weist darauf hin, dass das Produkt von regulärem Haushaltmüll getrennt entsorgt werden sollte. Es liegt in Ihrer Verantwortung, dieses Gerät und andere elektrische und elektronische Geräte über die dafür zuständigen und von der Regierung oder örtlichen Behörden dazu bestimmten Sammelstellen zu entsorgen. Ordnungsgemäßes Entsorgen und Recyceln trägt dazu bei, potentielle negative Folgen für Umwelt und die menschliche Gesundheit zu vermeiden. Wenn Sie weitere Informationen zur Entsorgung Ihrer Altgeräte benötigen, wenden Sie sich bitte an die örtlichen Behörden oder städtischen Entsorgungsdienste oder an den Händler, bei dem Sie das Produkt erworben haben.

Eesti (Estonian) - Keskkonnaalane informatsioon Euroopa Liidus asuvatele klientidele

Euroopa Liidu direktiivi 2002/96/EÜ nõuete kohaselt on seadmeid, millel on tootel või pakendil käesolev sümbol, keelatud kõrvaldada koos sorteerimata olmejäätmetega. See sümbol näitab, et toode tuleks kõrvaldada eraldi tavalistest olmejäätmevoogudest. Olete kohustatud kõrvaldama käesoleva ja ka muud elektri- ja elektroonikaseadmed riigi või kohalike ametiasutuste poolt ette nähtud kogumispunktide kaudu. Seadmete korrektne kõrvaldamine ja ringlussevõtt aitab vältida võimalikke negatiivseid tagajärgi keskkonnale ning inimeste tervisele. Vanade seadmete kõrvaldamise kohta täpsema informatsiooni saamiseks võtke palun ühendust kohalike ametiasutustega, jäätmekäitlusfirmaga või kauplusega, kust te toote ostsite.

Español (Spanish) - Información medioambiental para clientes de la Unión Europea

La Directiva 2002/96/CE de la UE exige que los equipos que lleven este símbolo en el propio aparato y/o en su embalaje no deben eliminarse junto con otros residuos urbanos no seleccionados. El símbolo indica que el producto en cuestión debe separarse de los residuos domésticos convencionales con vistas a su eliminación. Es responsabilidad suya desechar este y cualesquiera otros aparatos eléctricos y electrónicos a través de los puntos de recogida que ponen a su disposición el gobierno y las autoridades locales. Al desechar y reciclar correctamente estos aparatos estará contribuyendo a evitar posibles consecuencias negativas para el medio ambiente y la salud de las personas. Si desea obtener información más detallada sobre la eliminación segura de su aparato usado, consulte a las autoridades locales, al servicio de recogida y eliminación de residuos de su zona o pregunte en la tienda donde adquirió el producto.

ξλληνικά (Greek) - Στοιχεία περιβαλλοντικής προστασίας για πελάτες εντός της Ευρωπαϊκής Ένωσης

Η Κοινοτική Οδηγία 2002/96/EC απαιτεί ότι ο εξοπλισμός ο οποίος φέρει αυτό το σύμβολο στο προϊόν και/ή στη συσκευασία του δεν πρέπει να απορρίπτεται μαζί με τα μικτά κοινοτικά απορρίμματα. Το σύμβολο υποδεικνύει ότι αυτό το προϊόν θα πρέπει να απορρίπτεται ξεχωριστά από τα συνήθη οικιακά απορρίμματα. Είστε υπεύθυνος για την απόρριψη του παρόντος και άλλου ηλεκτρικού και ηλεκτρονικού εξοπλισμού μέσω των καθορισμένων εγκαταστάσεων συγκέντρωσης απορριμμάτων οι οποίες παρέχονται από το κράτος ή τις αρμόδιες τοπικές αρχές. Η σωστή απόρριψη και ανακύκλωση συμβάλλει στην πρόληψη πιθανών αρνητικών συνεπειών για το περιβάλλον και την υγεία. Για περισσότερες πληροφορίες σχετικά με την απόρριψη του παλιού σας εξοπλισμού, παρακαλώ επικοινωνήστε με τις τοπικές αρχές, τις υπηρεσίες απόρριψης ή το κατάστημα από το οποίο αγοράσατε το προϊόν.

Français (French) - Informations environnementales pour les clients de l'Union européenne

La directive européenne 2002/96/CE exige que l'équipement sur lequel est apposé ce symbole sur le produit et/ou son emballage ne soit pas jeté avec les autres ordures ménagères. Ce symbole indique que le produit doit être éliminé dans un circuit distinct de celui pour les déchets des ménages. Il est de votre responsabilité de jeter ce matériel ainsi que tout autre matériel électrique ou électronique par les moyens de collecte indiqués par le gouvernement et les pouvoirs publics des collectivités territoriales. L'élimination et le recyclage en bonne et due forme ont pour but de lutter contre l'impact néfaste potentiel de ce type de produits sur l'environnement et la santé publique. Pour plus d'informations sur le mode d'élimination de votre ancien équipement, veuillez prendre contact avec les pouvoirs publics locaux, le service de traitement des déchets, ou l'endroit où vous avez acheté le produit.

Italiano (Italian) - Informazioni relative all'ambiente per i clienti residenti nell'Unione Europea

La direttiva europea 2002/96/EC richiede che le apparecchiature contrassegnate con questo simbolo sul prodotto e/o sull'imballaggio non siano smaltite insieme ai rifiuti urbani non differenziati. Il simbolo indica che questo prodotto non deve essere smaltito insieme ai normali rifiuti domestici. È responsabilità del proprietario smaltire sia questi prodotti sia le altre apparecchiature elettriche ed elettroniche mediante le specifiche strutture di raccolta indicate dal governo o dagli enti pubblici locali. Il corretto smaltimento ed il riciclaggio aiuteranno a prevenire conseguenze potenzialmente negative per l'ambiente e per la salute dell'essere umano. Per ricevere informazioni più dettagliate circa lo smaltimento delle vecchie apparecchiature in Vostro possesso, Vi invitiamo a contattare gli enti pubblici di competenza, il servizio di smaltimento rifiuti o il negozio nel quale avete acquistato il prodotto.

Latviešu valoda (Latvian) - Ekoloģiska informācija klientiem Eiropas Savienības jurisdikcijā

Direktīvā 2002/96/EK ir prasība, ka aprīkojumu, kam pievienota zīme uz paša izstrādājuma vai uz tā iesaiņojuma, nedrīkst izmest nešķirotā veidā kopā ar komunālajiem atkritumiem (tiem, ko rada vietēji iedzīvotāji un uzņēmumi). Šī zīme nozīmē to, ka šī ierīce ir jāizmet atkritumos tā, lai tā nenonāktu kopā ar parastiem mājsaimniecības atkritumiem. Jūsu pienākums ir šo un citas elektriskas un elektroniskas ierīces izmest atkritumos, izmantojot īpašus atkritumu savākšanas veidus un līdzekļus, ko nodrošina valsts un pašvaldību iestādes. Ja izmešana atkritumos un pārstrāde tiek veikta pareizi, tad mazinās iespējamais kaitējums dabai un cilvēku veselībai. Sīkākas ziņas par novecojuša aprīkojuma izmešanu atkritumos jūs varat saņemt vietējā pašvaldībā, atkritumu savākšanas dienestā, kā arī veikalā, kur iegādājāties šo izstrādājumu.

Lietuvškai (Lithuanian) - Aplinkosaugos informacija, skirta Europos Sąjungos vartotojams

Europos direktyva 2002/96/EC numato, kad įrangos, kuri ir kurios pakuotė yra pažymėta šiuo simboliu (įveskite simbolį), negalima šalinti kartu su nerūšiuotomis komunalinėmis atliekomis. Šis simbolis rodo, kad gaminį reikia šalinti atskirai nuo bendro buitinių atliekų srauto. Jūs privalote užtikrinti, kad ši ir kita elektros ar elektroninė įranga būtų šalinama per tam tikras nacionalinės ar vietinės valdžios nustatytas atliekų rinkimo sistemas. Tinkamai šalinant ir perdirbant atliekas, bus išvengta galimos žalos aplinkai ir žmonių sveikatai. Daugiau informacijos apie jūsų senos įrangos šalinimą gali pateikti vietinės valdžios institucijos, atliekų šalinimo tarnybos arba parduotuvės, kuriose įsigijote tą gaminį.

Malti (Maltese) - Informazzjoni Ambjentali għal Klijenti fl-Unjoni Ewropea

Id-Direttiva Ewropea 2002/96/KE titlob li t-tagħmir li jkun fih is-simbolu fuq il-prodott u/jew fuq l-ippakkjar ma jistax jintrema ma' skart muniċipali li ma ġiex isseparat. Is-simbolu jindika li dan il-prodott għandu jintrema separatament minn ma' l-iskart domestiku regolari. Hija responsabbiltà tiegħek li tarmi dan it-tagħmir u kull tagħmir ieħor ta' l-elettriku u elettroniku permezz ta' faċilitajiet ta' ġbir appuntati apposta mill-gvern jew mill-awtoritajiet lokali. Ir-rimi b'mod korrett u r-riċiklaġġ jgħin jipprevjeni konsegwenzi negattivi potenzjali għall-ambjent u għas-saħħa tal-bniedem. Għal aktar informazzjoni dettaljata dwar ir-rimi tat-tagħmir antik tiegħek, jekk jogħġbok ikkuntattja lill-awtoritajiet lokali tiegħek, is-servizzi għar-rimi ta' l-iskart, jew il-ħanut minn fejn xtrajt il-prodott.

Magyar (Hungarian) - Környezetvédelmi információ az európai uniós vásárlók számára

A 2002/96/EC számú európai uniós irányelv megkívánja, hogy azokat a termékeket, amelyeken, és/vagy amelyek csomagolásán az alábbi címke megjelenik, tilos a többi szelektálatlan lakossági hulladékkal együtt kidobni. A címke azt jelöli, hogy az adott termék kidobásakor a szokványos háztartási hulladékelszállítási rendszerektõl elkülönített eljárást kell alkalmazni. Az Ön felelõssége, hogy ezt, és más elektromos és elektronikus berendezéseit a kormányzati vagy a helyi hatóságok által kijelölt gyűjtõredszereken keresztül számolja fel. A megfelelõ hulladékfeldolgozás segít a környezetre és az emberi egészségre potenciálisan ártalmas negatív hatások megelõzésében. Ha elavult berendezéseinek felszámolásához további részletes információra van szüksége, kérjük, lépjen kapcsolatba a helyi hatóságokkal, a hulladékfeldolgozási szolgálattal, vagy azzal üzlettel, ahol a terméket vásárolta.

Nederlands (Dutch) - Milieu-informatie voor klanten in de Europese Unie

De Europese Richtlijn 2002/96/EC schrijft voor dat apparatuur die is voorzien van dit symbool op het product of de verpakking, niet mag worden ingezameld met niet-gescheiden huishoudelijk afval. Dit symbool geeft aan dat het product apart moet worden ingezameld. U bent zelf verantwoordelijk voor de vernietiging van deze en andere elektrische en elektronische apparatuur via de daarvoor door de landelijke of plaatselijke overheid aangewezen inzamelingskanalen. De juiste vernietiging en recycling van deze apparatuur voorkomt mogelijke negatieve gevolgen voor het milieu en de gezondheid. Voor meer informatie over het vernietigen van uw oude apparatuur neemt u contact op met de plaatselijke autoriteiten of afvalverwerkingsdienst, of met de winkel waar u het product hebt aangeschaft.

Norsk (Norwegian) - Miljøinformasjon for kunder i EU

EU-direktiv 2002/96/EF krever at utstyr med følgende symbol avbildet på produktet og/eller pakningen, ikke må kastes sammen med usortert avfall. Symbolet indikerer at dette produktet skal håndteres atskilt fra ordinær avfallsinnsamling for husholdningsavfall. Det er ditt ansvar å kvitte deg med dette produktet og annet elektrisk og elektronisk avfall via egne innsamlingsordninger slik myndighetene eller kommunene bestemmer. Korrekt avfallshåndtering og gjenvinning vil være med på å forhindre mulige negative konsekvenser for miljø og helse. For nærmere informasjon om håndtering av det kasserte utstyret ditt, kan du ta kontakt med kommunen, en innsamlingsstasjon for avfall eller butikken der du kjøpte produktet.

Polski (Polish) - Informacja dla klientów w Unii Europejskiej o przepisach dotyczących ochrony środowiska

Dyrektywa Europejska 2002/96/EC wymaga, aby sprzęt oznaczony symbolem znajdującym się na produkcie i/lub jego opakowaniu nie był wyrzucany razem z innymi niesortowanymi odpadami komunalnymi. Symbol ten wskazuje, że produkt nie powinien być usuwany razem ze zwykłymi odpadami z gospodarstw domowych. Na Państwu spoczywa obowiązek wyrzucania tego i innych urządzeń elektrycznych oraz elektronicznych w punktach odbioru wyznaczonych przez władze krajowe lub lokalne. Pozbywanie się sprzętu we właściwy sposób i jego recykling pomogą zapobiec potencjalnie negatywnym konsekwencjom dla środowiska i zdrowia ludzkiego. W celu uzyskania szczegółowych informacji o usuwaniu starego sprzętu, prosimy zwrócić się do lokalnych władz, służb oczyszczania miasta lub sklepu, w którym produkt został nabyty.

Português (Portuguese) - Informação ambiental para clientes da União Europeia

A Directiva Europeia 2002/96/CE exige que o equipamento que exibe este símbolo no produto e/ou na sua embalagem não seja eliminado junto com os resíduos municipais não separados. O símbolo indica que este produto deve ser eliminado separadamente dos resíduos domésticos regulares. É da sua responsabilidade eliminar este e qualquer outro equipamento eléctrico e electrónico através das instalações de recolha designadas pelas autoridades governamentais ou locais. A eliminação e reciclagem correctas ajudarão a prevenir as consequências negativas para o ambiente e para a saúde humana. Para obter informações mais detalhadas sobre a forma de eliminar o seu equipamento antigo, contacte as autoridades locais, os serviços de eliminação de resíduos ou o estabelecimento comercial onde adquiriu o produto.

Română (Romanian) - Informații de mediu pentru clienții din Uniunea Europeană

Directiva europeană 2002/96/CE impune ca echipamentele care prezintă acest simbol pe produs și/sau pe ambalajul acestuia să nu fie casate împreună cu gunoiul menajer municipal. Simbolul indică faptul că acest produs trebuie să fie casat separat de gunoiul menajer obișnuit. Este responsabilitatea dvs. să casați acest produs și alte echipamente electrice și electronice prin intermediul unităților de colectare special desemnate de guvern sau de autoritățile locale. Casarea și reciclarea corecte vor ajuta la prevenirea potențialelor consecințe negative asupra sănătății mediului și a oamenilor. Pentru mai multe informații detaliate cu privire la casarea acestui echipament vechi, contactați autoritățile locale, serviciul de salubrizare sau magazinul de la care ați achiziționat produsul.

Slovenčina (Slovak) - Informácie o ochrane životného prostredia pre zákazníkov v Európskej únii

Podľa európskej smernice 2002/96/ES zariadenie s týmto symbolom na produkte a/alebo jeho balení nesmie byť likvidované spolu s netriedeným komunálnym odpadom. Symbol znamená, že produkt by sa mal likvidovať oddelene od bežného odpadu z domácností. Je vašou povinnosťou likvidovať toto i ostatné elektrické a elektronické zariadenia prostredníctvom špecializovaných zberných zariadení určených vládou alebo miestnymi orgánmi. Správna likvidácia a recyklácia pomôže zabrániť prípadným negatívnym dopadom na životné prostredie a zdravie ľudí. Ak máte záujem o podrobnejšie informácie o likvidácii starého zariadenia, obráťte sa, prosím, na miestne orgány, organizácie zaoberajúce sa likvidáciou odpadov alebo obchod, v ktorom ste si produkt zakúpili.

Slovenčina (Slovene) - Okoljske informacije za stranke v Evropski uniji

Evropska direktiva 2002/96/EC prepoveduje odlaganje opreme, označene s tem simbolom – na izdelku in/ali na embalaži – med običajne, nerazvrščene odpadke. Ta simbol opozarja, da je treba izdelek odvreči ločeno od preostalih gospodinjskih odpadkov. Vaša odgovornost je, da to in preostalo električno in elektronsko opremo odnesete na posebna zbirališča, ki jih določijo državne ustanove ali lokalna uprava. S pravilnim odlaganjem in recikliranjem boste preprečili morebitne škodljive vplive na okolje in zdravje ljudi. Če želite izvedeti več o odlaganju stare opreme, se obrnite na lokalno upravo, odpad ali trgovino, kjer ste izdelek kupili.

Suomi (Finnish) - Ympäristöä koskevia tietoja EU-alueen asiakkaille

EU-direktiivi 2002/96/EY edellyttää, että jos laitteistossa on tämä symboli itse tuotteessa ja/tai sen pakkauksessa, laitteistoa ei saa hävittää lajittelemattoman yhdyskuntajätteen mukana. Symboli merkitsee sitä, että tämä tuote on hävitettävä erillään tavallisesta kotitalousjätteestä. Sinun vastuullasi on hävittää tämä elektroniikkatuote ja muut vastaavat elektroniikkatuotteet viemällä tuote tai tuotteet viranomaisten määräämään keräyspisteeseen. Laitteiston oikea hävittäminen estää mahdolliset kielteiset vaikutukset ympäristöön ja ihmisten terveyteen. Lisätietoja vanhan laitteiston oikeasta hävitystavasta saa paikallisilta viranomaisilta, jätteenhävityspalvelusta tai siitä myymälästä, josta ostit tuotteen.

Svenska (Swedish) - Miljöinformation för kunder i Europeiska unionen

Det europeiska direktivet 2002/96/EC kräver att utrustning med denna symbol på produkten och/eller förpackningen inte får kastas med osorterat kommunalt avfall. Symbolen visar att denna produkt bör kastas efter att den avskiljts från vanligt hushållsavfall. Det faller på ditt ansvar att kasta denna och annan elektrisk och elektronisk utrustning på fastställda insamlingsplatser utsedda av regeringen eller lokala myndigheter. Korrekt kassering och återvinning skyddar mot eventuella negativa konsekvenser för miljön och personhälsa. För mer detaljerad information om kassering av din gamla utrustning kontaktar du dina lokala myndigheter, avfallshanteringen eller butiken där du köpte produkten.

WEB: For additional information, please visit **www.linksys.com**

Appendix T: Contact Information

Linksys Contact Information	
Website	http://www.linksys.com
FTP Site	ftp.linksys.com
Advice Line	800-546-5797 (LINKSYS)
Support	800-326-7114
RMA (Return Merchandise Authorization)	949-823-3000
Fax	949-823-3002

NOTE: Details on warranty and RMA issues can be found in the Warranty and Regulatory Information sections of this Guide.